MODEL AIRPLANE NEWS

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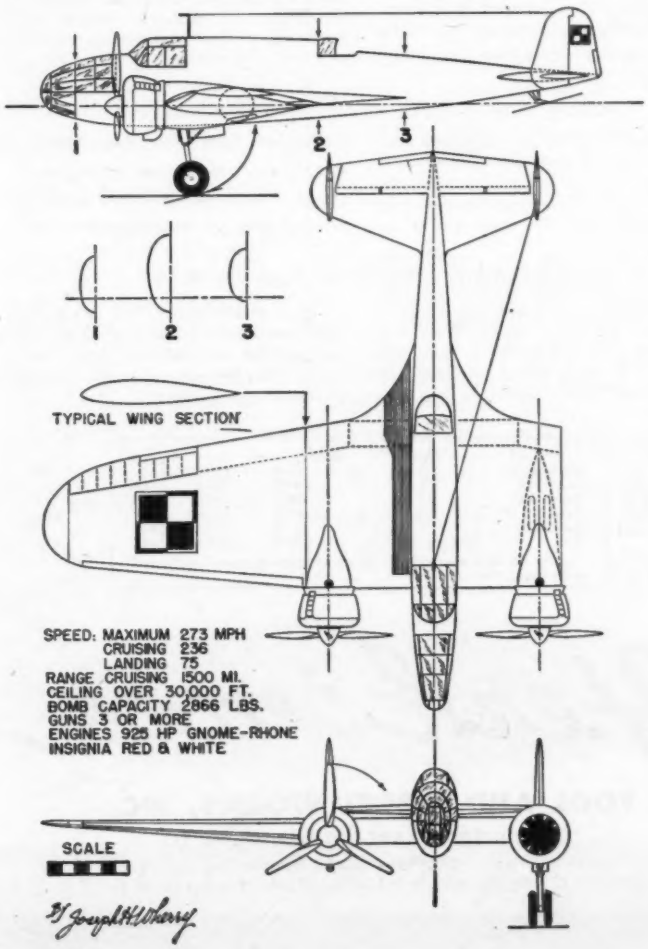
MORE ORDERS and more planes! That the aircraft industry is back in business again, as we told you previously, is only now becoming fully apparent. From the depths of the postwar doldrums—when an order for 24 wartime amphibians was real news—we now see hundreds of a single type on order and new aircraft designs that would have staggered the imagination of a *Design Forum* reader. There can be little doubt that the once languid U.S. aviation industry is now back in the lead and skyrocketing to its familiar pre-war productivity in new designs.

MCDONNELL XF-85 (see Oct. 1948 issue) has made its first test flight—but notice we did not say "successful" test flight, for it almost ended in tragedy! The swept-wing, stubby craft was carried aloft in the belly of a Boeing B-29 *Superfortress* to 30,000 ft. above Muroc Air Force Base, Calif. At the prescribed time, McDonnell test pilot Ed Shoch cut loose from the substitute "mother plane" (the Convair B-36A bomber is the real home of the XF-85) and dropped away for a fast jet flight, riding a skyrocket in the blue. But at the conclusion of the test flight, the tricky problem of coming back to "roost" nearly proved his undoing. The tiny XF-85 approached the huge trapeze suspended below the B-29, but the fighter was going too fast and climbing besides, with the result that the trapeze smashed through the fighter canopy, bashed Shoch in the head and knocked his oxygen mask loose. Shoch recovered consciousness as the XF-85 sped down in a dive. He quickly grabbed the end of the oxygen tube and crammed it in his mouth, thereby saving his life, for the dive could never have gotten him down to 10,000 ft. soon enough to permit normal breathing. Shoch brought the hot little craft into the 7 mile long landing field of Muroc at 175 mph and settled her down on the pavement-hard dry lake bed. The minute speedster settled to the ground on its belly (it has no landing gear), its lower fin

(*Turn to page* 59)

POLISH P.Z.L. P-37 "LOS" FIGHTER-BOMBER OF 1939



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JAY P. CLEVELAND
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DECEMBER 1948 VOL. XXXIX—No. 6

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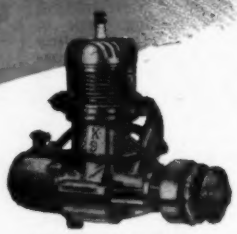

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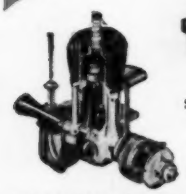

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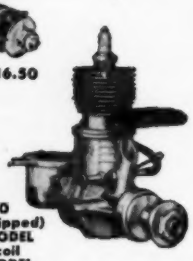

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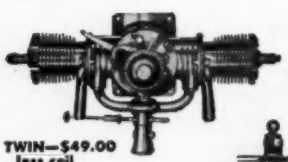

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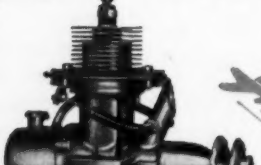

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★ COMPRESSED GAS (CO_2) MODELS

Single class, Junior record time of 2:9.6 (3-flight total) established by Dick Culver, Oak Ridge, Tenn., on June 12, 1948, with an "OK" CO_2.

★ FREE FLIGHT GAS MODELS RISE OFF GROUND

Class A, Junior record time of 6:36.0 (3-flight total) established by Ed Roberts, Jr., Marrietta, Ga., on June 13, 1948, with a Bantam.

★ FREE FLIGHT GAS MODELS RISE OFF GROUND

Class A, Senior record time of 6:27.2 (3-flight total) established by Edward Holeva, Schenectady, N. Y., on June 27, 1948, with a Bantam.

★ FREE FLIGHT GAS RISE OFF WATER

Class A, Open record time of 3:13.0 (3-flight average) established by Paul Salake, Hampton, Va., on December 8, 1947, with a Bantam.

★ CONTROL LINE SPEED GAS MODELS

Class A, Senior record speed of 107.48 mph established by Maurice Stanglin, Dallas, Texas, on February 10, 1948, with a Bantam.

★ COMPRESSED GAS (CO_2) MODELS

Combined class, Open record time of 14 min., 54 sec. (3-flight total) established by Joe Dodson, Hampton, Va., on March 4, 1948, with an "OK" CO_2.

★ CONTROL LINE SPEED GAS MODELS

Class A, Open record speed of 97.47 mph established by John Kasserman, Knoxville, Tenn., on March 9, 1948, with a Bantam.

★ FREE FLIGHT GAS MODELS RISE OFF GROUND

Class A, Open record time of 11:20.8 (total, 2 flights) established by Marjorie A. Watkins, Oakland, Calif., on April 11, 1948, with a Bantam.

★ COMPRESSED GAS (CO_2) MODELS

Single Class, Senior record time of 8:54 (3-flight total) established by Phil Sargent, 213 Thornton Ave., Chattanooga, Tenn., on July 13, 1948, with an "OK" CO_2.

★ COMPRESSED GAS (CO_2) MODELS

Single class, Senior Record time of 11:14.8 (3-flight total) established by Ed Lusciuskas, Warehouse Point, Conn., on July 18, 1948, with an "OK" CO_2.

FIRST PLACE WINNERS at the 1948 Nationals

FIRST— Control Line* Speed Gas Models Class A, Open, Harold DeBolt, Williamsville, N. Y., 108.43 mph with an "OK" Bantam.

FIRST— Control Line* Stunt Class A, Open, Harold DeBolt, Williamsville, N. Y., with an "OK" Bantam.

FIRST— Compressed Gas* (CO_2) Models Single Class, Junior (3-flight total) 4:55 by Larry Erickson, Omaha, Neb., with an "OK" CO_2.

FIRST— Compressed Gas* (CO_2) Models Single Class, Senior (3-flight total), 7:28.6 with an "OK" CO_2.

FIRST— Compressed Gas* (CO_2) Models Single Class, Open (3-flight total), 11:37.3 with an "OK" CO_2.

●

FIRST PLACE WINNERS at the 1948 Plymouth International Meet

FIRST— Control Line* Speed Gas Models Class A, Junior, 93.26 mph with an "OK" Bantam.

FIRST— Control Line* Speed Gas Models Class A, Senior, 102.2 mph with an "OK" Bantam.

FIRST— Control Line* Speed Gas Models Class A, Open, 102.1 mph with an "OK" Bantam.

*Unofficial—Verification when officially released.

●

And these are just a few recent winners announced by the A.M.A. Contest Board . . . authentic proof that "OK" consistently powers the champions. Watch this column in future issues for the latest records set by "OK" powered models. So if you want championship performance, you're on your way when you say "OK".

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SCRAP BOX

By BILL WINTER

DOES our entire system of model classes need revision? The "most combined-class meet" ever held, the 17th Nationals at Olathe, was an awesome indication of the expense and trouble involved in running such a spectacle. It took six days to run off the big show, days so jammed with simultaneous events that the impression was as if "independent nationals" for rubber, free flight and control line were going on at the same time, to say nothing of indoors, rise-off-water, hand launched glider, towline glider, Wakefield eliminations, flying scale, radio and CO-2.

It is this ever growing immensity that more than anything else causes so many headaches in running the great prestige meets like the Nationals and the Western Open. Is it better to insist on these giant all-embracing mets, hoping for the breaks to pull us through—or to settle for something more reasonable, thereby increasing the percentage for finding satisfactory sponsors, adequate facilities, and so on. When the breaks fall right, we have an Olathe. When they go against us, we have a Wichita or a Minneapolis, despite the old college try of the men who bravely take on the thankless job.

Frank Greene likes to refer to the class structure as an old house that started out as a two room affair, with another room tacked on every time there was an addition to the family until today we have a tumbledown affair falling apart at the seams. There are more than 30 classes in rubber, 19 in gas, 8 in gliders, one jet, and one CO-2, disregarding age groups, the proposed expert class, and lobbyists for the catapult glider and other ideas. This fantastic setup affects contests all down the line, even to the individual at Bailey's Switch, because it tends to kill off certain types of models and unfavorably influence the design of those that remain alive. In principle, it would be far superior to have less ramifications in each family of model, with less multiplicity of sizes and age groups. Some of these things are hard to act upon but others could be altered without too much difficulty.

Jim Cahill pointed up the difference very well when he contrasted the three-flight a day contest, like the Wakefield, with a meet he attended a couple of weeks later where he tried to get in three flights each in A, B and C in rubber, and nine in glider! His view, perhaps the one extreme, is that there should be one-size gas job, one-size rubber model, one-size glider. (For obvious reasons, the rascal thinks these should fit into the trunk of a 1947 Studebaker!) People like Cahill, however, have been beating their brains out for years on the contest trail and their opinions come from experience. So take another paragraph, Jim.

"I think we should junk the antique junior, senior, open, 1927-1934 setup, and have just two classes, under and over 18 years of age," says Cahill. That is the logical dividing line, when a fellow comes out of high school. And make a rule that in all AMA contests at least one prize be available in the under-18 class for every three in the over-18 group. These smaller contests are the starting point for the younger fellows and there are few separate prizes in these smaller contests."

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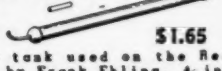

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hands think. Greene has the same thing on his mind, giving a break to the youngster or beginner, and to simplify the entire deal. "There are many objections to the customary method of combining classes, especially in rubber—which usually gets the axe first and hardest," Frank comments "It simply forces the fellows to build larger and larger models in self defense, thus getting away from the type of model a beginner or youngster can build and fly.

"My first proposal," says Greene, "is to eliminate the senior class, and up the junior limit from 16 to 18. Statistics show that the 18 to 21 year old boys can compete with anyone. The poor junior, just turning 16, is lost!" Greene further proposes that two classes be used in rubber, towline, hand-launched glider, and indoor. Outdoor classes would be 100 and 200 sq. in., with the 200 in. class matching the Wakefield requirements, and the smaller class on the same line. Gas, he thinks, should be limited to two or three classes, with r.o.w. limited to just one class.

To put down some stray thoughts on Frank's suggestions, the 100 sq. in. model deal is a good one. 150 sq. in. is too close to the 200, both in required ability to fly and in general performance. The small model would double in brass at beginner's events, club projects and the like. The Wakefield requirements need more attention for there are signs that this country is falling behind in this field. A fuselage model designed to Wakefield requirements is a trying project, and don't kid yourself. As to engine classes—and Cahill suggests burning at the stake the mad engine boys who made so many categories—the setup is unwieldy and, in some spots, virtually meaningless. The bigger and now wackier looking free flight jobs are flown in contests purely because the events exist. Why in the name of common sense must we have a Class D, where some ships are so huge they could tote Sinbad the Sailor? (See p. 33 November 1948 M.A.N. for a pic of one such giant.) But would simplification hurt the engine manufacturer?

First, let's consider the origin of some of these classes. This year both jet and CO-2 were added to the official family. Quite obviously we cannot freeze the setup entirely against all such expansion. To do so would stifle progress. But if such events must be added—and there will be more from time to time—why not cut out the deadwood and streamline the whole shooting match? Then there is our tendency to set up events to make use of all available sizes of engines Here is a tough decision!

Should we cater to the manufacturer who gets smart and squeezes in a new size engine, say one smaller than all the others? Engine designers like Ray Arden see a big future for the tiny engine. Once perfected for mass use these engines, no doubt, would be a terrific stimulus to the average kid, particularly the 1,000,000 to 2,000,000 American modelers who never heard of a contest. Ohlsson and Rice, 'tis said, have a big market among youngsters, and getting these average guys to mix is a must. But then, is the manufacturer who thinks in terms of such markets much concerned with the contest picture? If he isn't, what difference can our action make to him?

If, for another example, we wished to get rid of the ridiculous Boeing bombers of free flight, would the larger displacement engines suffer? Have Atwood, Orwick and others built such a clientele among free flighters that they would suffer through a trend to smaller engine classes, or is their big market in sport and stunt? Isn't the McCoy and Hornet market in speed? Perhaps the thing to do, if this revolution is in the cards, is to appoint industry representatives to any pertinent AMA committees in an advisory capacity. A long term view of at least one and maybe two years would cushion the industrial effects of contemplated rules changes, rather than toss new rules on the industry like a pail of cold water. While the modelers must think first of themselves and not become bogged down by cries of "you can't do it", we do have a responsibility to the trade. On the other hand, industry should be given an appreciation of our problems, which affects it as well as us.

(*Turn to page* 56)

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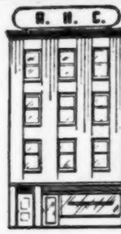

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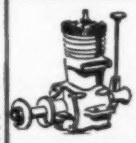

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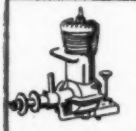

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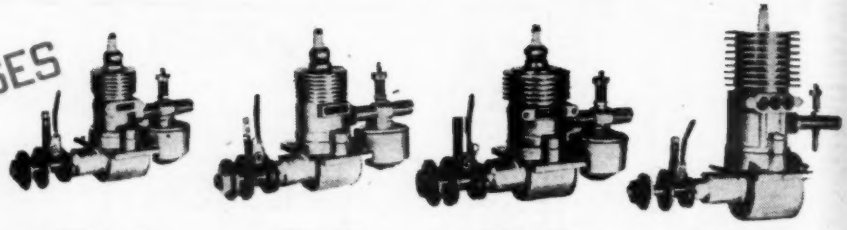

Ideal for both ignition and Glo-plug operation

BUZZ 19	BUZZ 29	BUZZ 35	BUZZ 60
CL"A" $4.95	CL"B" $4.95	CL"C" $4.95	CL"D" $7.95

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The BUZZ Engines are manufactured by a company that for years has been the world's largest maker of automobile replacement pistons and other precision gasoline engine parts. Thousands of gas engines and parts were made during the war by this company for the War Dept. for use in walkie-talkies, field generating sets, etc., etc. Since the war, thousands of gas engines have been made for scooter, lawn mower and other industrial uses. When we say unconditionally that the BUZZ engine is well engineered and well constructed, will give you plenty of good service, this is no idle boast, but a fact!

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Factory assembled— ready to run— including Champion Spark Plug

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1,000,000 Engines a year available.

NO SALES TO DEALERS

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Engine prices are introductory only. Effective Mar. 1, prices will be increased 100%.

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Do not judge the BUZZ Engines by their low prices. It is true we make very little money on each engine sold. But because many, many thousands of these engines have been produced by the latest modern processes, the cost has been reduced so that they can sell at the lowest prices ever seen.

PRECISION ENGINEERING OFFERS:

- Construction and materials that permit use of engines in boats and cars as well as airplanes.
- Complete instructions.
- Streamlined for easier operation and longer life.
- Easier to start.
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- All metal tank that takes any fuel.
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- Runs on easy-to-get oil mixed with ordinary gasoline. No hard-to-get and dangerous chemicals needed.
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- Last but not least, we maintain an inspection and testing department where your engine gets the last word in care not only before it is shipped, but when it can receive expert attention if anything goes wrong after you own it.

NOW YOU CAN AFFORD THE BEST!

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	A	B	C	D
Displacement	.199	.299	.350	.610
Bore	.66	.812	.850	1.00
Stroke	.562	.562	.562	.777
Horsepower	1/7	1/6	1/5	1/4
RPM	7,500	8,000	8,500	9,000
Propeller	8"	10"	11"	12"
Weight (ozs.)	4	4½	4½	9

COMPLETE ACCESSORY UNIT

Sold only with each BUZZ Engine

Coil-Condenser-prop-switch high tension wire-ignition wire-coil holder-battery box-wrench-presto engine starter, No. 70 oil.

ONLY $2.49

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complete with refillable tank & charging unit.

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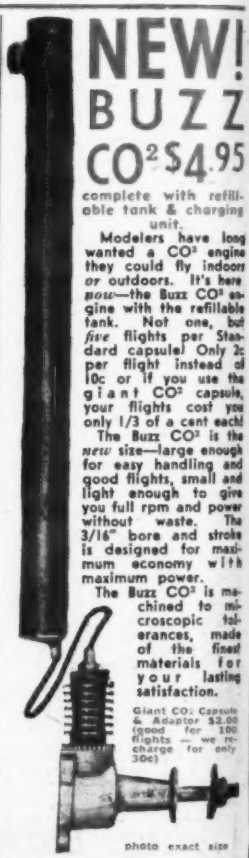

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- ECONOMICAL
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- FREE FLIGHT OR U-CONTROL
- 3/16" bore & stroke; .0052 cu. in. displ.; speed range 2,000 to 6,000 rpm.
- FLIES 18" to 24" models and up.
- Weight only ⅝ oz. ready to fly.

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THE ANSWER TO THE $64 QUESTION!!

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THE COMPLETE OUTFIT, AT ABOUT ONE-HALF THE ACTUAL COST IF THE ITEMS WERE BOUGHT SEPARATELY!!

takes one evening to construct

the NEW "BUCKEYE" Speedboat

with choice of:

GENIE OR JUDCO Engines, $11.95

with choice of:

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HERE IS WHAT YOU GET:

1. Your choice of four well-known engines.
2. Fuel tank.
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4. Complete engine instructions.
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with BUZZ $10.50

with OHLSSON $15.50 (both glo engines)

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3. Metal fuel tank.
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10. Pamphlet on glo fuels.
11. Plug wrench.
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CHOICE OF U-CONTROL OR FREE FLIGHT

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GENIE JUDCO

$12.50 CHOICE OF

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$13.50 CHOICE OF

McCOY 19 (Ball Bearing & Rot. Valve) OHLSSON (Rot. Valve)

$15.00 CHOICE OF

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4) Everlast Condenser.
5) 12" High Tension Lead.
6) 18" Insulated Ignition Wire.
*7) 100 ft. U-Control Wire.
8) Rubber Wheels.
9) Formed Landing Gear.
10) Correct Size Propeller.
11) Large Tube Cement.
*12) Control Handle.
13) Ignition Slide Switch.
14) Metal Battery Box.
15) 3-Way Spark Plug Wrench.
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38) Plane Identification Tags.
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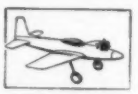

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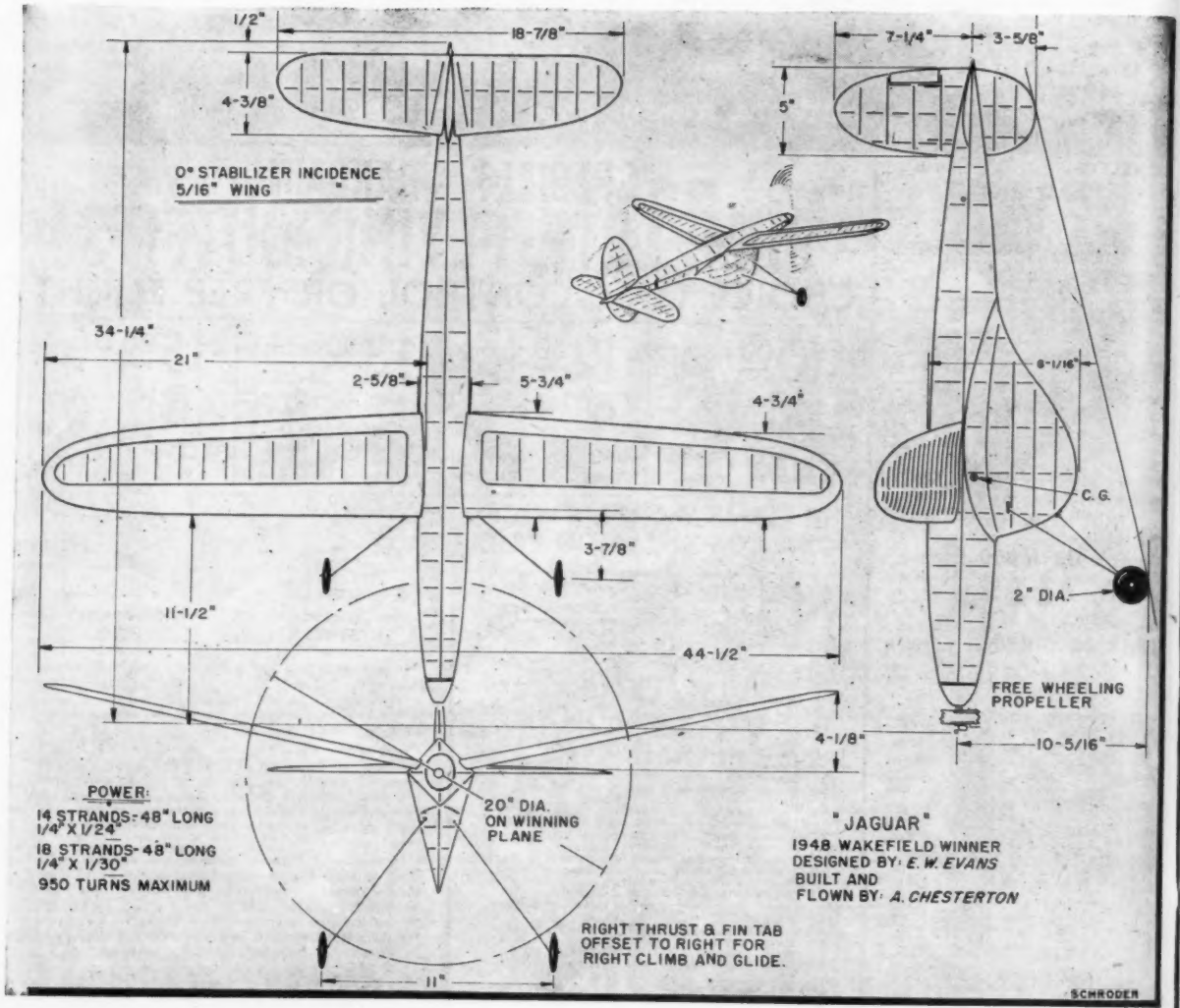


England Wins The Wakefield

by BILL WINTER

The great event, held for the first time since 1939, is won by Roy Chesterton

AT 10:20 on the morning of August 27—a brutally hot day in Akron Ohio—Roy Chesterton, leadoff man for Great Britain's Wakefield team, turned loose his *Jaguar* for a flight of 4:46.5. As the peculiar diamond-fuselaged ship, with its great underbelly fin and chomping 20 inch silver colored free wheeler, climbed almost staight out in a smooth, easy ascent, many practiced eyes followed it until its dethermalizer, set for four minutes, brought it to earth. Onlookers didn't know it then but Chesterton was going to call his shots all day—his somewhat freakish looking ship, a kit design at that, finally disappearing on its third flight of 3:32.9 for a three-flight average of 6:27.3

Chesterton's first flight was highly dramatic. For the first time in nine years the Wakefield event was being held. The last time (at Bendix in 1939) first-man-off Dick Korda had hooked successive thermals for a long flight of more than 40 minutes. The 1948 running of the world's toughest contest plainly was going to be bitterly fought out.

From England had come a crackerjack team of six men who had won their right to fly against all comers, first in area eliminations and then in final eliminations in a rain and wind of over 40 mph. On the team were men like Bob Copland, for the fourth time a team member, and Len Stott, competing for his third time. Another fleet of truly high performance models had been expertly flown in tests the night before by the Belgian team who had come over via Sabena, the Belgian airline. A Canadian team was present; and proxy models from "Down Under," flown by the contestwise Chicago rubber men. On the American team were Dick Korda, 1939 winner; Jim Cahill who brought the trophy back from France in 1938; Tom Coryell; Bob Holland, 1948 National Champ; Jim Bunton; and Dick Schumacker, noted old timer. Champions were commonplace. Carl Goldberg filled out the Belgian team as a proxy flier. Last year's National Champ Frank Cummings, who unfortunately had to miss the meet at Olathe, flew proxy for Australia. Heavy haze, a moderate drift in the morning hours, a scarcity of thermals, dead air, temperature of 102, and high humidity made it anyone's guess as to what would happen as Chesterton neatly removed his hands from prop and wingtips and stepped back to watch his *Jaguar* steadily gain altitude.

The first round was over in 65 minutes. Bob Copland was right on Chesterton's heels with a time of more than 4 minutes. Coryell Frost of Australia (Cummings), and Pregaldier of Belgium, each bettered 3 minutes. Cahill stalled tremendously once on his first for 1:48, but on his second round he caught a thermal for 7:48 out of sight, and spent the rest of the day hunting in a thick woods ten miles away. Korda got off to his usual zooming start but then his rubber went dead in the heat and the climb petered out. A progressive rudder warp, unnoticed in the heat, helped finish Dick after that, just as warps helped kill off a number of other contestants. B. B. Marsh's New Zealand model, flown by Otto Curth of Chicago, zoomed up to hook a thermal for 12:11.1, out of sight on the second round. This was the longest flight of the day and good enough to keep the New Zealander in second place. Steady flying by Bob Holland gave America third.

As the big day wore on it clearly became Chesterton against the field, the third round progressing flight by flight while the Britishers crossed their fingers. Marsh needed a mere 4 1/2 minutes to win, Cahill, who was lost, would have to get 10 minutes—possible but improbable. Bob Holland wasn't too far out despite the handicap of changing motors and breaking strands. On the third and crucial launch, Curth could coax no better than 2 1/2 minutes out of his New Zealand model. Holland came within 50 ft. of a flight that might have turned the trick when his ship, with but 100 ft. altitude, played around the bottom of a thermal for 5 minutes, drifting but a couple of hundred feet. With three strands broken in winding, the rubber just didn't have what it took to get another precious fifty feet to ride the thermal.

Why did the British win? C. S. Rushbrooke, editor of *Aeromodeller* who accompanied the team to Akron, thinks better organization and better teamwork. There was no question that the British were primed for bear. They *had* to win the cup in 1948 and accordingly left no stone unturned. Outside of Chesterton's fine performance, other contestants believed the big difference was the black English rubber manufactured by Dunlop. Doughty was the only Britisher to break a motor, when virtually everyone else was plagued by snapping strands and breaking rubber. Cummings, who flew Frost's machine, had to rebuild the nose four times after motor breakage, finally flying half wound. The Belgians were bothered by breaking rubber. Australia and Canada never had a chance. On the American team, only Cahill reported no trouble. This was ironic for, in 1939, it was the British rubber that couldn't take the heat, helplessly bogging down their team. This year their rubber stood up remarkably well.

"So bad was the trouble," reported Rushbrooke, "that the quality and dependability of the English rubber became the chief topic of conversation as the day progressed. The overseas boys were prepared to sell their souls for it."

British models were distinguished for their universal use of the dethermalizer and their continued addiction to the two-bladed free-wheeling propeller. Dethermalizers were of the fuse type, either releasing a chute, ala Copland, or a pop-up tail as on the Chesterton ship. Far from stamping their props as superior, Dick Korda remarked, "Heaven help us, if they ever go to folders." Jim Cahill said somewhat enigmatically, "Believe they just don't want to try one-bladed props, which are easier to fold than two-bladers."

Chesterton's use of the dethermalizer as it should be used was something to see. Both his first and second flights came quite close to the setting of the dethermalizer. As usual British practice, he used the dethermalizer on the first two flights, going all out on the third when he lost the ship.

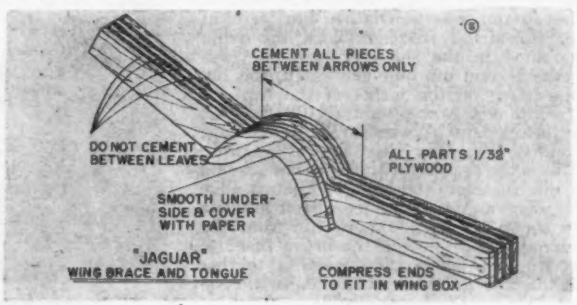
The *Jaguar* is about as unorthodox as an orthodox model can get. The fuselage is a diamond, considerably under the required crossection rule. To come up to the rule, an "annex" is built beneath the fuselage by extending down triangles of 1/8" square, faired off into a long streamlined section. Roughly estimated, this fin reaches halfway to the ground. This construction probably saves some weight, 1/16" x 1/8" crosspieces being used toward the rear. The designer apparently believes that drag is reduced. The landing gear is braced by bringing together several pieces of wire at the wheels, which assists launching and stops the landing gear legs from vibrating to create drag. To eliminate warps, the wing leading edge sheeting is continued around the tip of the tapered wing and along the trailing edge. Giving a deceiving impression of hack design, the *Jaguar* actually involved great thought and skill. Its wing mount is one of the cleverest ever seen in this country.

The typical British Wakefield design involves a "tongue and groove" wing mount. This is simply a sheet-balsa box in the fuselage, into which fits a tongue of sheet balsa built in the butt end of the wing panels. The friction fit holds the wing in position, yet allows each panel to fly off in a bad smash. Chesterton's airplane uses a unique spray of plywood (see drawing) which fits snugly into the hollow ends of the main spar. Not only is this a most dependable and flexible attachment but, by

Roy Chesterton holds aloft his winning model

Dick Korda, ex-Wakefield champ, looks downcast after the meet

This Belgian team flew to USA, attended Plymouth meet, then Wakefield



fitting the plywood into a lengthwise groove in the sides of the fuselage, the wing can be moved fore and aft for trim. The typical British model climbs to the right and glides to the left. Chesterton's made one great power turn to the right, and sometimes flies almost dead ahead under power.

Unfortunately, this interesting machine failed to disprove the place of the British streamline designs. Copland, exponent of the "pretty" airplane, simply out-thought himself. Since American models were noted for high climb on a burst of power, and the weather seemed typically American with terrific heat and probable strong thermals, he shelved his variable pitch prop (!) and Dunlop rubber and tried to beat us at our own game by going to American rubber. When the typically American model weather failed to materialize, and our rubber failed with the heat and humidity, Copland too was stuck. After the one good flight he was licked. The disconsolate Copland and Korda spent a good part of the day playing around with British rubber in Korda's model to see what was going on. Dick had broken six strands of his own motor and cut four more on his first flight, and had to use a new motor for each of his three flights. Bob Holland, who kibitzed this post mortem, reports Korda's model seemed to have double the climb when powered with the potent black stuff!

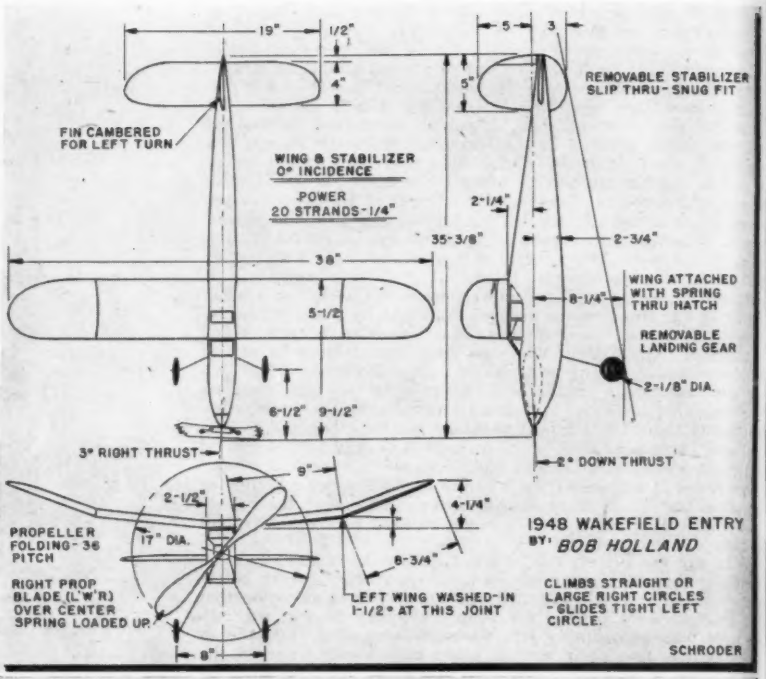
"I will say that Chesterton's job performed beautifully," says Dick Schumacker. "I had thought its smooth performance was due mainly to power characteristics of that rubber—no burst of power but just about the evenest power I have seen—but judging by the final results it didn't help all of the team. The altitude gained by Chesterton's job was phenomenal and let us hear no more about that spectacular American climb!"

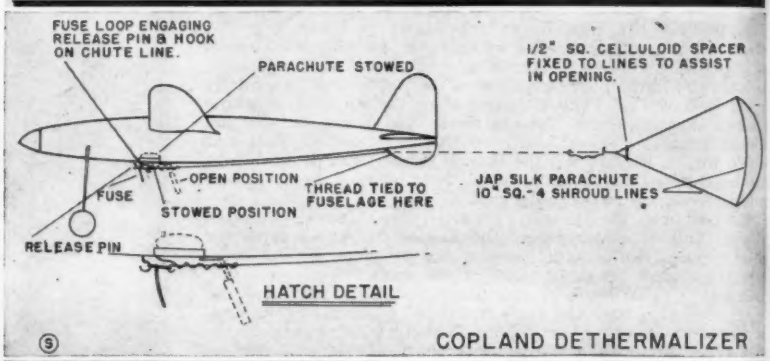
Outclimbing all but the British, the Belgian jobs also were effective, if somewhat roughly built. These were peculiar jobs with wings of a 14-to-1 aspect ratio, and wire braced wings and tails. The only reason the flyers could not do better was that they all tried to flatten the glide to infinity—a bad move in the unusual heat—and consequently stalled all the way down from very high altitudes. Commenting on these ships, Jim Bunton said: "The night before the contest I saw one of these Belgian jobs averaging three to four minutes, something I thought was impossible!"

Tom Coryell, who managed to find enough time to look into many things, reports that foreign models using good rubber were climbing as well after 1:15 as they were at 9:15. Not only did they have more power, and appreciably more turns per inch, but they did not have the severe tapering-off of power that hampered the U.S. models.

One of the most interesting ships at the meet was Jim Cahill's unconventional design that had impressed witnesses of the eliminations at Olathe. Jim went in for an airfoil fuselage, with the wing mounted in the shoulder position, twin rudders, one big and one small, the big one being on the inside of the turn. "I tried to get a ship that would hold its adjustments in all weather," Jim explains, "and not warp or twist in wet weather. This is the reason for the diagonal bracing in the fuselage, and covered leading edge on wing and tail. I use the airfoil fuselage to see if I can get more lift from the fuselage, and to see if the broad fuselage at the rear would add stability to that of the 33% tail. One reason for twin rud-

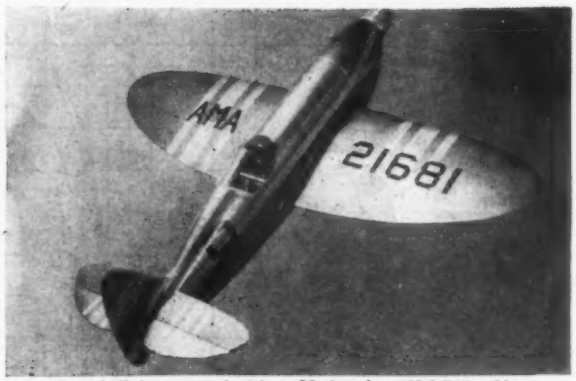
(*Turn to page* 44)



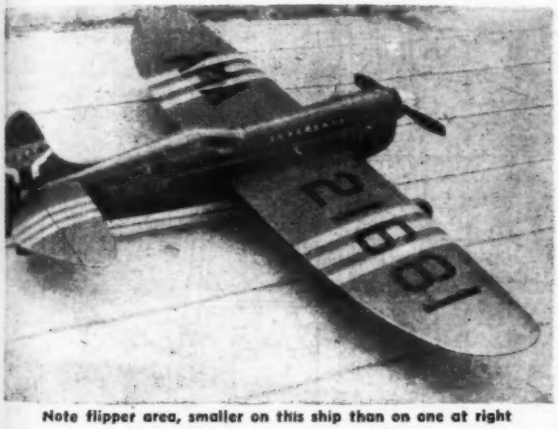


Another view of Chesterton's model. Winner is being congratulated by Irv Polk

Fury Screwball MkVIII, latest of a long line of Furies



Screwball Jr., powered with a .19, is a beautiful little ship



Note flipper area, smaller on this ship than on one at right

This is MkVII, designed to do violent maneuvers if expertly handled

FURY SCREWBALL

by J. S. LUCK

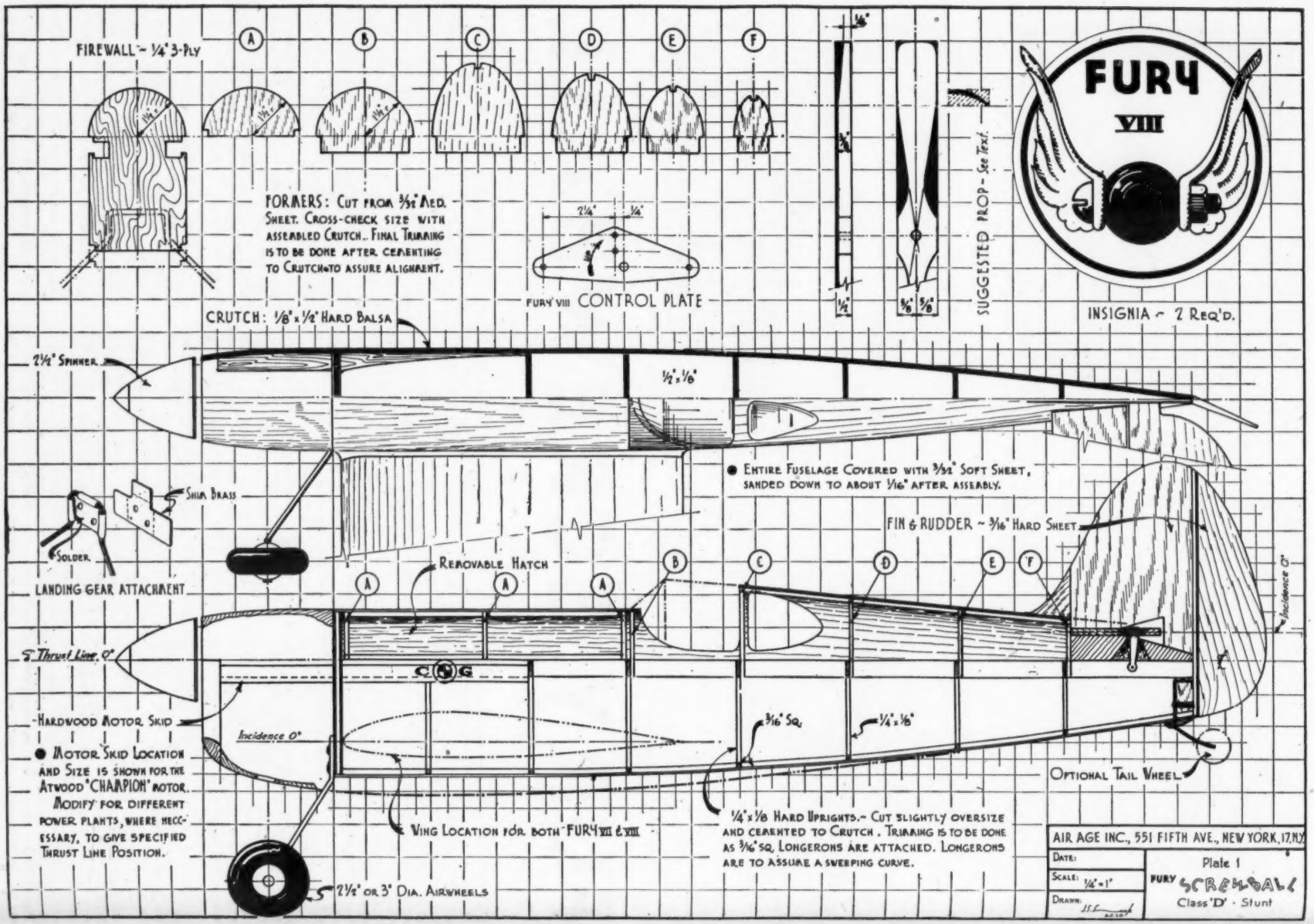
THE FURY series of controliners have been in the process of development for quite a while now. They first appeared in a 1944 issue of M.A.N., another in the series was described in '46. This article covers the two latest models: Mark VII and VIII. Designed in the light of most recent controline stunt practice, they should meet the requirements of skilled flyers who demand a ship that can be relied upon to execute all the aerobatics in the book—smoothly, surely, and swiftly. But that is not all. The *Fury* clan has always attempted to prove that ugliness of form is *not* a prerequisite of functional efficiency. These last versions are no exception. They will demonstrate that a stunt job doesn't need to offend the eye with clumsy square wings and a generally misproportioned configuration. In fact the aerodynamic qualities of the cleaner looking, more streamlined *Fury Screwball* is at least up to, and more often exceeds that of the ugly ducklings.

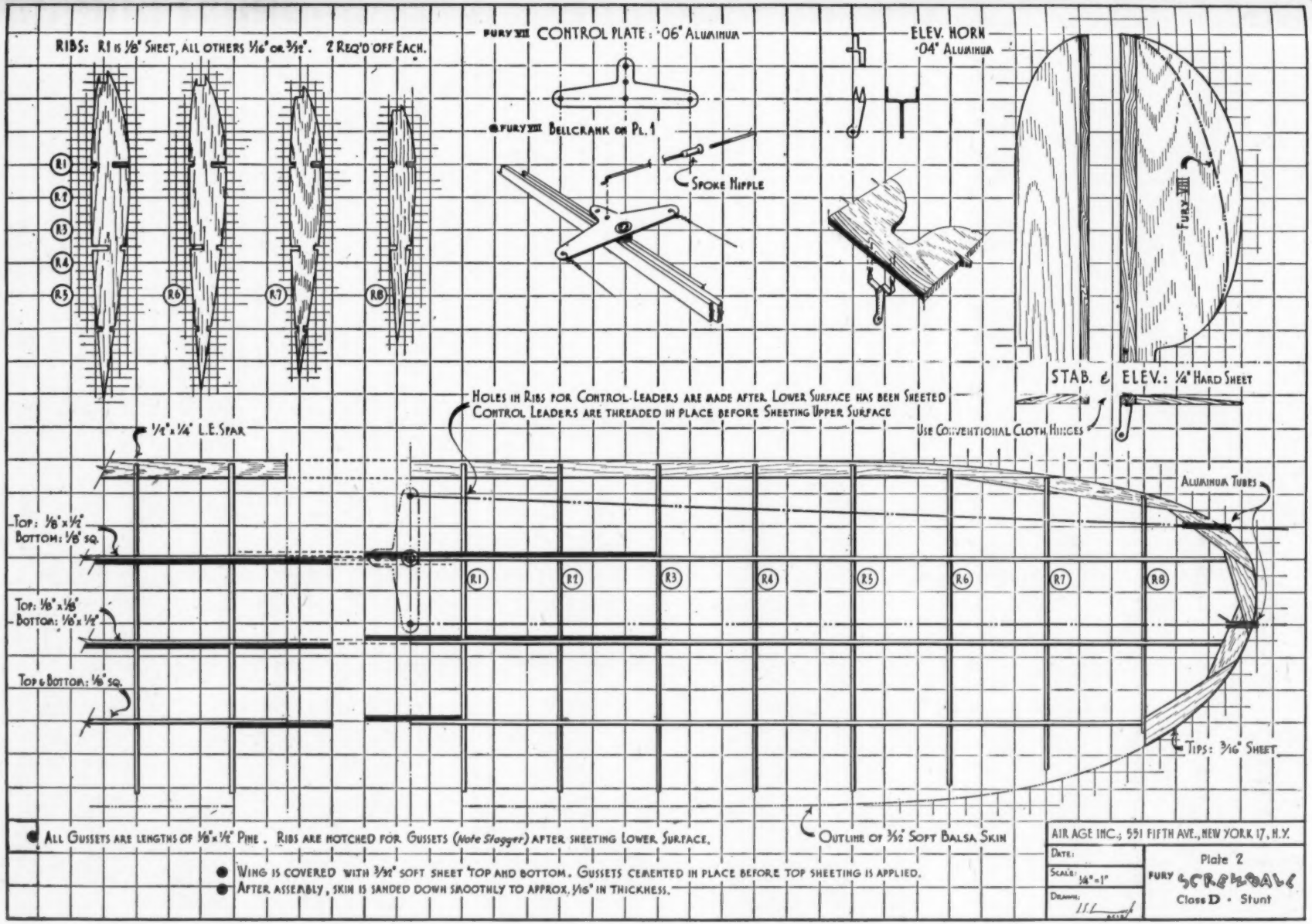
On the matter of airfoils: it will be noted that the *Screwball* employs the N.A.C.A. 23012 section. In these days, when nearly every super sunt ace advocates a symmetrical section, a lifting airfoil may seem to be a foolhardy departure. Well! each to his own opinion. Those builders irrevocably wedded to the sect which believes a symmetrical airfoil is a *must*, may use one on the *Screwball* if it makes them really happy. All-round performance is almost as good. But to some of us, commonsense thought on the matter leaves no doubt as to which type of section will give better takeoffs, snappier loops, and easier, slower landings. The lifting sections, natch! We Lifting Section guys will admit that when flying upsidedown our ship has to fly in a very slightly tail-down manner; but, heck! better to induce drag in the abnormal flight attitude than condone it as a necessary evil in all conditions of flight including the normal. That is true of the symmetrical airfoil, and there is nothing to be done about it because such a section must enter the airstream at some definite angle of attack in order to generate lift. Generally speaking, supported weight being equal, the lifting section has a lower average drag—for the conditions we are interested in, that is.

The *Screwball*, as shown in the plans, is a Class D ship. Maybe it would wallow around with a topnotch Class C motor, but the only maneuver that could be definitely counted on with an underpowered ship would be such spectacular aerobatics as "crawling down the lines," or completing an outside loop with the spinner coyly buried, ostrich fashion, in the ground. Even the rugged *Screwball* could not take that sort of thing. Not only is a Class D powerplant specified, but the prop should also be right. The propeller recommended is shown. Although it was developed from tests conducted only with the *Atwood Champ*, it should work equally well with similar motors; or at least provide a point of departure for further research into other 'plane-motor combinations. This prop is designed according to the findings of Prof. F. W. Schmitz; the pronounced undercamber of the blade section is a necessary feature, and the location of the widest element falls ideally at about 70% of the radius. The props carved from the blank shown will be 12" in diameter and of 8" pitch. Straight, close-grained birch makes a beautiful prop. Despite its hardness it is easy to carve.

Two *Fury Screwballs* are shown; Mk. VII and VIII. Which of these to build is entirely up to the reader. Perhaps certain features of both may be combined to give the desired model. Flight and handling characteristics of the Mk. VII and VIII are quite different. The Mk. VII is the more sensitive of the two; it will perform its stunts with the hair-trigger touch desired by the maestro. The VIII is a little more docile; it will answer its control with certainty and deliberation. The bell-

(*Turn to page* 42)


FIREWALL ~ 1/4" 3-PLY
A
B
C
D
E
F
FORMERS: CUT FROM 3/32" SHEET. CROSS-CHECK SIZE WITH ASSEMBLED CRUTCH. FINAL TRIMMING IS TO BE DONE AFTER CEMENTING TO CRUTCH TO ASSURE ALIGNMENT.
FURY VIII CONTROL PLATE
SUGGESTED PROP - See Text.
FURY VIII
INSIGNIA ~ 2 REQ'D.
CRUTCH: 1/8" x 1/2" HARD BALSA
2 1/2" SPINNER
1/2" x 1/8"
ENTIRE FUSELAGE COVERED WITH 3/32" SOFT SHEET, SANDED DOWN TO ABOUT 1/16" AFTER ASSEMBLY.
SHIM BRASS
SOLDER
LANDING GEAR ATTACHMENT
FIN & RUDDER ~ 3/16" HARD SHEET
REMOVABLE HATCH
Thrust Line 0°
Incidence 0°
C G
HARDWOOD MOTOR SKID
MOTOR SKID LOCATION AND SIZE IS SHOWN FOR THE ATWOOD "CHAMPION" MOTOR. MODIFY FOR DIFFERENT POWER PLANTS, WHERE NECESSARY, TO GIVE SPECIFIED THRUST LINE POSITION.
WING LOCATION FOR BOTH FURY VII & VIII
2 1/2" OR 3" DIA. AIRWHEELS
3/16" SQ.
1/4" x 1/8"
1/4" x 1/8 HARD UPRIGHTS. - CUT SLIGHTLY OVERSIZE AND CEMENTED TO CRUTCH. TRIMMING IS TO BE DONE AS 3/16" SQ. LONGERONS ARE ATTACHED. LONGERONS ARE TO ASSUME A SWEEPING CURVE.
OPTIONAL TAIL WHEEL
AIR AGE INC., 551 FIFTH AVE., NEW YORK, 17, N.Y.
DATE:
SCALE: 1/4" = 1"
DRAWN:
Plate 1
FURY SCREWBALL
Class 'D' · Stunt


RIBS: R1 is 1/8" Sheet, all others 1/16" or 3/32". 2 Req'd off Each.
R1
R2
R3
R4
R5
R6
R7
R8
Fury XII CONTROL PLATE: .06" Aluminum
Fury XII Bellcrank on Pl. 1
Spoke Nipple
ELEV. HORN
.04" Aluminum
Fury XII
STAB. & ELEV.: 1/4" Hard Sheet
Use Conventional Cloth Hinges
Holes in Ribs for Control Leaders are made after Lower Surface has been Sheeted
Control Leaders are threaded in place before Sheeting Upper Surface
1/2" x 1/4" L.E. Spar
Top: 1/8" x 1/2"
Bottom: 1/8" sq.
Top: 1/8" x 1/8"
Bottom: 1/16" x 1/2"
Top & Bottom: 1/8" sq.
Aluminum Tubes
Tips: 3/16" Sheet
Outline of 3/32" Soft Balsa Skin
All Gussets are lengths of 1/8" x 1/2" Pine. Ribs are notched for Gussets (Note Stagger) after sheeting Lower Surface.
Wing is covered with 3/32" soft sheet top and bottom. Gussets cemented in place before top sheeting is applied.
After assembly, skin is sanded down smoothly to approx. 1/16" in thickness.
AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
Date:
Scale: 1/4" = 1"
Drawn: ILL
Plate 2
Fury SCRIBBALE
Class D • Stunt

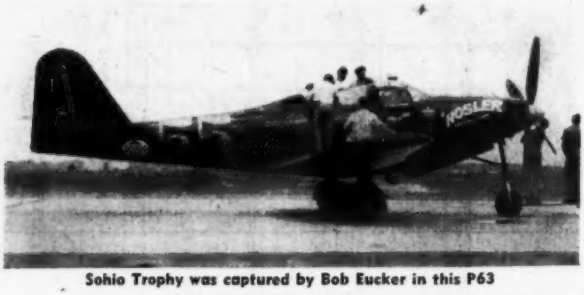
by JOHN L. MACKENZIE

Again the Goodyear Event was of top interest—only military types flew in other events

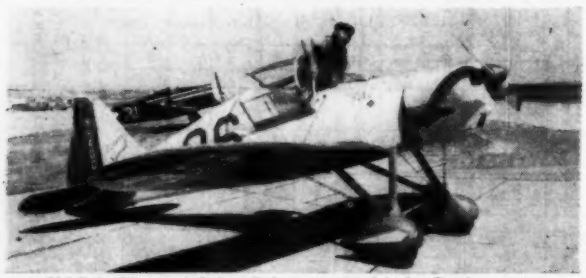
This P51 flown by Anson Johnson won Thompson Trophy race

CLEVELAND AIR RACES

Paul Mantz won Bendix race for third time in a P51. Here's the latest



Sohio Trophy was captured by Bob Eucker in this P63



Old *Pete* flies again! Ray Baker revamped it for Goodyear race

Bill Brennand won in 1947 with this ship but came in fourth this year

FLASHING before the grandstands at 669.480 mph, the North American F-86 set the pace for the 1948 version of the world's greatest display of high speed aircraft, the National Air Races! Held annually at Cleveland Municipal Airport on the Labor Day weekend, this aggregation of racing events includes such classics as the Bendix Derby, Thompson Trophy Race, and the Goodyear Trophy Races. The added feature of demonstrations of Air Force, Navy and Marine aerial might makes the event the nation's top attraction for the airminded.

High point this year was the Air Force's attempt at a new world's speed record with the F-86. Flown by Maj. R. L. Johnson of Wright Field over a 3 kilometer course, the swept wing jet fighter exceeded by almost 20 mph the record of 650.796, now held by the Navy's Douglas *Skystreak*. Unfortunately, failure of the timing devices to record one of the four required passes over the course deprived Maj. Johnson of official F.A.I recognition of his brilliant speed dash.

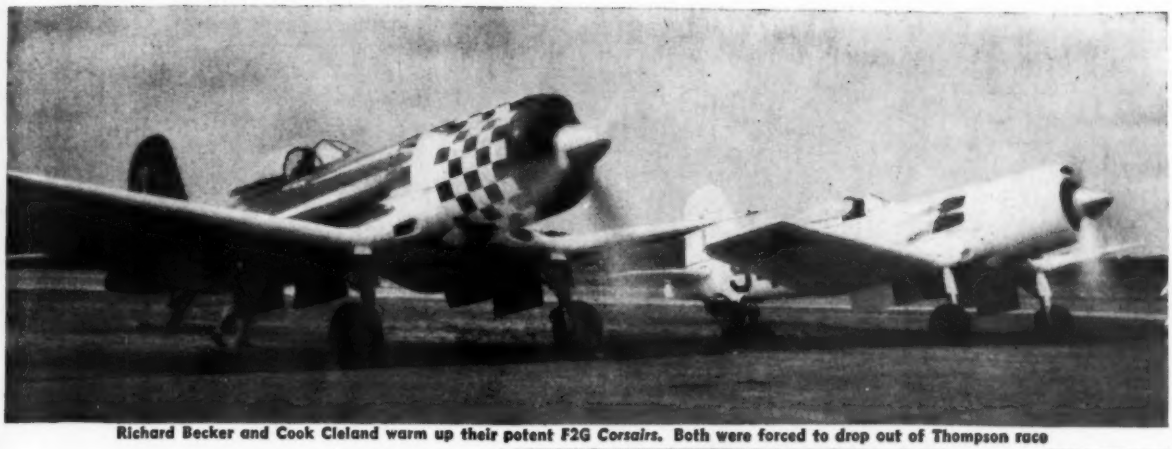
Failure to top existing records seemed to dominate all major divisions of the races, excepting the Goodyear events. Beginning with the Bendix transcontinental flight on Saturday, and ending with the Thompson closed course race on Monday, winning times were consistently below those of last year.

The Jet Division of the Bendix was flown exclusively by members of Navy Fighting Squadron 51 in North American FJ-1 *Fury* fighters. The winning time of 4 hrs. 10 min. 34 sec. at 489.526 mph from Van Nuys, Calif. to Cleveland was scored by Ensign Francis T. Brown of Oconto, Wis. The record for this event is 4:04:18 at 503.123 mph, established by Col. Leon W. Gray with an Air Force F-80 in 1947.

The Bendix "R" Division was another of those nip and tuck affairs for which that race is becoming famous. Colorful Paul Mantz rang up his third successive victory in the 2,045 mile grind to become the first three-time winner. His margin over second place Linton Carney was only 1 min. 9 sec.; over third place Jacqueline Cochrane 1 min. 19 sec.; over fourth place Ed Lunken 2 min. 58 sec. All four flew Packard Rolls Royce powered P-51 *Mustangs*, making this the most hotly contested cross country race in history. J. F. Stallings, flying a De-Haviland *Mosquito* bomber, placed fifth while Joe DeBona, the only other entrant, landed his P-51 with dry gas tanks at Norwalk, O. Mantz's time was 4:33:48.7 or 447.980 mph, considerably below his own record of 460.423 set last year. There can be no doubt that the 45 year old Hollywood stunt man has definitely established himself as the all time ace of transcontinental racers.

The most important innovation in the races came to light in the renowned Thompson Trophy event. Possibly taking a tip from their model building brothers, five of the entrants introduced an alcohol triptane blend of fuel that produced the highest speeds on record in the qualifying runs. But the new bug juice served up a few problems in the heat of competition which will give the engineers something to stew over until next year's racing takes place.

Out of the ten starters in the 300 mile classic, only three finished! Anson L. Johnson's victory in that event is a tribute to his good judgment and knowledge of his plane's capabilities and limitations. While one after another of the contestants was forced to leave the race, young Johnson moved from fourth to first position by this process of elimination. He was the only user of the new fuel to experience no difficulties in the air, and although his winning speed of 383.767 mph is far below Cook Cleland's 1947 record of 396.13, it is the highest ever registered by a P-51 in the Thompson race. This 27 year old flier, a former model builder by the way, is a pilot for National



Richard Becker and Cook Cleland warm up their potent F2G *Corsairs*. Both were forced to drop out of Thompson race

Air Lines on the New York-Miami run and makes his home in Miami Springs, Fla. He flew cargo planes and ferried fighters as an Air Force pilot during the war. Although he has had some previous racing experience, this was Anson's first bid for the Thompson.

Use of the alcohol fuel first came to light during the qualifying runs when Chuck Brown of Indianapolis, flying the well known *Airacobra* which won the race two years ago, hung up a mark of 418.300 mph. At the same time Cook Cleland and Dick Becker, flying Cleland's two big F2G *Corsairs*, registered 417.424 and 405.882 respectively. Then Johnson came along with 398.634. Charles Walling, a P-51 jockey and only other user of the liquid dynamite, showed a less impressive 384.469. Brown, incidentally, led the big race for 18 laps with a new Thompson record almost in his grasp when engine trouble forced him to land. His powerplant lost revs seriously at every pylon turn in the last few laps, due perhaps to some unknown reaction of the alcohol blend. But Cleland and Becker hardly had a chance at the trophy since both were forced to leave the course with identical troubles a few minutes after takeoff. In both cases, an engine backfire tore loose the cowling over the carburetor airscoop. Their fuel evidently burned more slowly than anticipated. It will take time and trial to iron out these bugs, of course, but when the answers are known you can watch those old records tumble.

The Thompson experience of the last two years has demonstrated that endurance is just as important as all-out speed in a 300 mile contest. In the future, racing pilots will learn just how far they can push these souped-up war surplus fighters and still finish the 20 laps as part of their preparation for the event. This change in piloting tactics should be much in evidence the next time our top speed merchants take to the pylons.

That the comparatively new Goodyear Trophy Races are fast gaining popularity among flying folk is attested by the 39 entries filed this year. Exacting qualifying tests reduced this group to 21 starters. A series of four elimination heats and two semi-finals brought the 8 best midget planes into the Labor Day final. This race is limited to planes using engines of 190 cu. in. displacement or less, and was flown around a two mile rectangular course entirely within the confines of the airport and in full view of the grandstand.

The oldtimers in the game have now completely forsaken the high speed races and are concentrating on this midget event. A glance at the records will show that the airplanes designed and built by Tony LeVier, Steve Wittman and Art Chester monopolized six of the seven top money positions in the Goodyear. Although Tony has been prohibited from further air racing by his employers at Lockheed, both Wittman and Chester were back at the controls of their newest creations.

Herman "Fish" Salmon piloted LeVier's Cosmic Wind, the "Minnow," into the winner's circle and a new Goodyear record at 169.608 mph. This little

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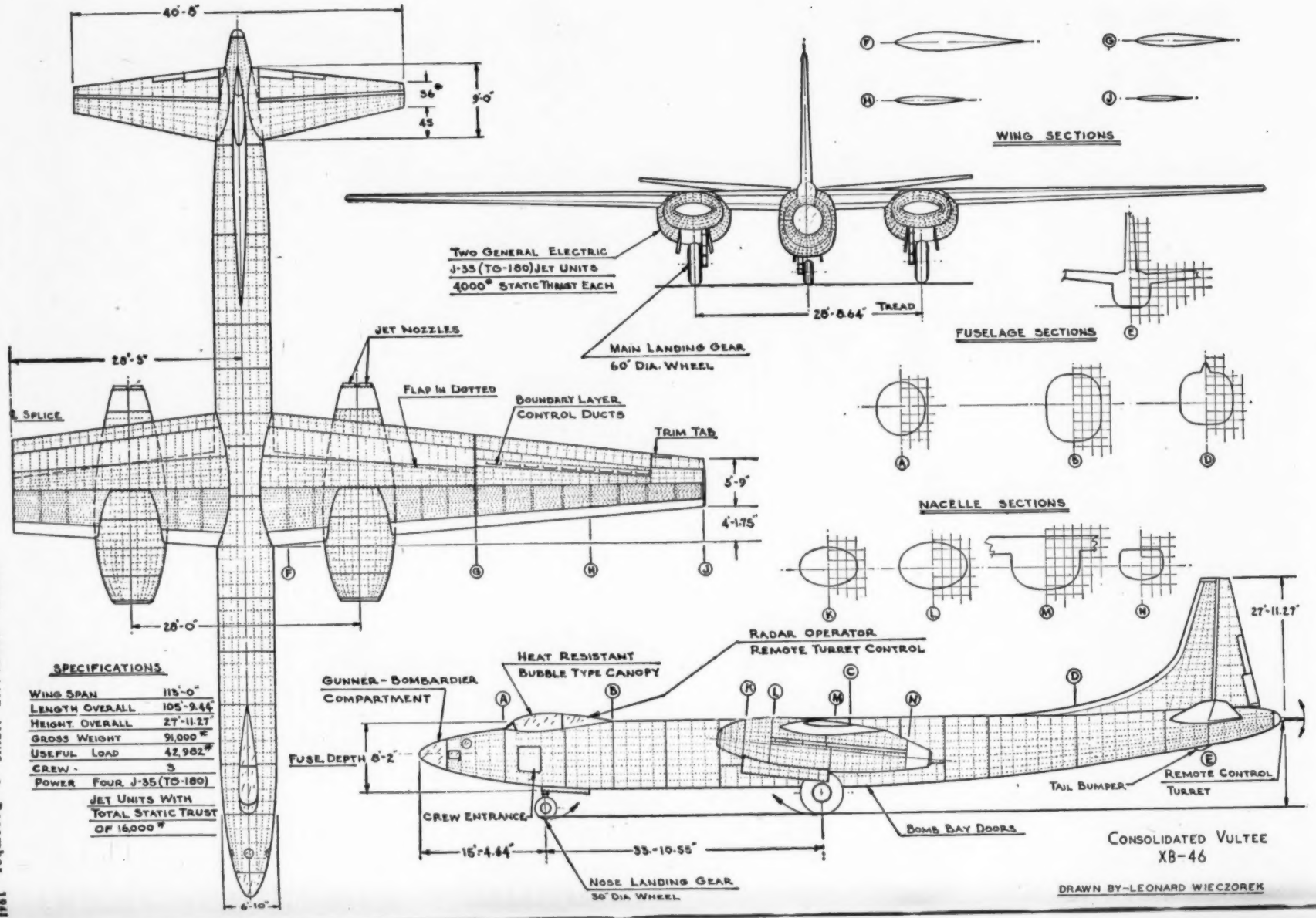
Art Chester's latest *Swee' Pea* in which he won third place

"Fish" Salmon topped the Goodyear race field in this sleek *Comic Wind*

Steve Wittman took second place in this new version of *Buster*

William Falck in cockpit of his somewhat radical ship *Rivets*


40'-6"
36"
45
9'-0"
WING SECTIONS
TWO GENERAL ELECTRIC
J-35 (TG-180) JET UNITS
4000# STATIC THRUST EACH
28'-8.64" TREAD
MAIN LANDING GEAR
60" DIA. WHEEL
FUSELAGE SECTIONS
JET NOZZLES
28'-5"
FLAP IN DOTTED
BOUNDARY LAYER
CONTROL DUCTS
TRIM TAB
5'-9"
4'-1.75"
28'-0"
6'-10"
NACELLE SECTIONS
27'-11.27"
RADAR OPERATOR
REMOTE TURRET CONTROL
HEAT RESISTANT
BUBBLE TYPE CANOPY
GUNNER - BOMBARDIER
COMPARTMENT
FUSEL. DEPTH 8'-2"
TAIL BUMPER
REMOTE CONTROL
TURRET
CREW ENTRANCE
BOMB BAY DOORS
15'-4.44"
33'-10.55"
NOSE LANDING GEAR
30" DIA WHEEL
SPECIFICATIONS
WING SPAN 113'-0"
LENGTH OVERALL 105'-9.44"
HEIGHT OVERALL 27'-11.27"
GROSS WEIGHT 91,000#
USEFUL LOAD 42,982#
CREW 3
POWER FOUR J-35 (TG-180) JET UNITS WITH TOTAL STATIC TRUST OF 16,000#
CONSOLIDATED VULTEE
XB-46
DRAWN BY-LEONARD WIECZOREK

Convair XB-46

by ROBERT McLARREN

HOW does an airplane become a standard Air Force type? That's the question which often seems an unanswerable riddle when an airplane that seemingly has "everything" fails to make the grade for quantity military procurement; yet it is one of the easiest aeronautical questions to answer although not so easy to comprehend in the case of specific airplanes.

However, no airplane design proves a total loss, either to its manufacturer or to the procuring service. For "planes that failed" furnish an accurate and unbroken history of aeronautical progress and, in many respects, a study of such aircraft furnishes the student with a far more illuminating history of aviation than does a review of those airplanes produced in quantity and used in actual service.

The Consolidated Vultee XB-46, our Plane of the Month, is such an airplane—a model the service passed by, yet its story indicates the constant value of such experiments to the U. S. Air Force and to aviation progress.

The story of the Convair jet bomber goes back to November 1944 and to a conference room at Wright Field in Dayton. In that room sat a group of the most prominent aeronautical figures of the nation—prominent in research, in design, tactical requirements, planning, manufacture, procurement. The problem before them was quite simple and the Air Force major-general addressed the group simply: "Gentlemen, we must have a 500 miles per hour bomber as quickly as possible!" It was that simple statement that set in action a chain of circumstances unequalled in aviation history.

Five hundred miles per hour! That was faster than the recognized world's speed record, yet this airplane had to carry a 10 ton bomb load and fly 3000 miles at the fastest speed ever flown in even a special racing type airplane. Assuredly here was no routine design problem; here was a task demanding a whole new world of research and development, a vast new series of tests and engineering advances, a whole complex of technical and production talent! And it had to be done fast!

Obviously 500 mph meant jet engines, and several of them in a single airplane, something never before accomplished. It meant entirely new wing sections, for none then flying could possibly travel at that great speed efficiently. It meant new structural techniques; stronger, lighter materials and entirely new external shapes.

But the group present accepted the challenge in a spirit of cooperation unique in the highly competitive aircraft business. North American and Convair were awarded projects for four engine jet bombers; Boeing and Martin six jet bombers; and Northrop and Martin eight jet bombers, thereby laying out a series of projects covering the entire practical range of multi-jet aircraft. The Air Materiel Command offered its entire resources to these manufacturers. But the proposal that served

(*Turn to page* 49)

design forum

by CHARLES H. GRANT

THERE are some model builders who believe that if they build a model of outstanding design and enter it in a contest they are sure to walk home with one of the prizes. They feel the design of the airplane is the only factor necessary for prize winning. Truly this is important, but there are two other factors which are equally important. First, the airplane must be *built* accurately so that all the contours, angles and proportions are according to plan. Second, the airplane must be properly *adjusted*. This is the trickiest problem of all because usually no two designs are adjusted the same for proper flight.

Variation in design usually requires a variation in adjustment. Some planes fly well only when they have right thrust, left thrust, down thrust or some particular setting of wing and/or tail surfaces. Freak designs usually demand all sorts of trick adjustments to perform properly. Also, in any one design, various adjustments of tail and motor thrusts are often required because there is an overlooked error in one of the aerodynamic design factors, such as angle of incidence, dihedral angle, etc. However if you are an expert in design and an accurate builder, it is possible to create one airplane after another of the same design and have them perform more or less alike with neutral adjustments—that is without offset or angular thrust line, left or right rudder, etc. By proportioning the tail surfaces in any particular manner, any one of the various types of flight may be obtained.

Did you know that you can make any model turn right or left merely by varying the size of the fin, for instance? Different designs of planes require different sizes of fins but for any particular design an excessively large fin will always tend to produce a left circle. A fin which is greatly undersized for that particular model will induce a right circle, and it is perfectly possible to regulate the size of the fin so the plane will fly absolutely straight. This is true only in powered aircraft because this effect is produced by the inter-reaction of the propeller torque, the propeller gyroscopic action and the fin. This is very important, yet it is often overlooked. The explanation is quite simple.

If you have not already noticed the effect of fin size, equip one of your models with a fin which is very much oversized and then fly it. It will be difficult to have it turn in any direction except against the torque. It will bank to the left and turn to the left. Now, gradually cut down the size of this fin making one flight after another. A fin made of balsa wood will serve best for this purpose. As the size of the fin is reduced with each flight, you will note that the plane has less tendency to circle to the left although it still banks to the left. Finally a point will be reached where the plane will fly straight without circling. As the size of the fin is further reduced, the plane will show a decided tendency to turn to the right even though it banks to the left. With power off, planes with various fin sizes will tend to fly straight, however. The one with little fin area will respond most readily to air currents turning one way or the other.

This is advantageous in contest flying because such a ship is most likely to turn into a thermal. A plane that flies straight often dis-

(*Turn to page* 46)

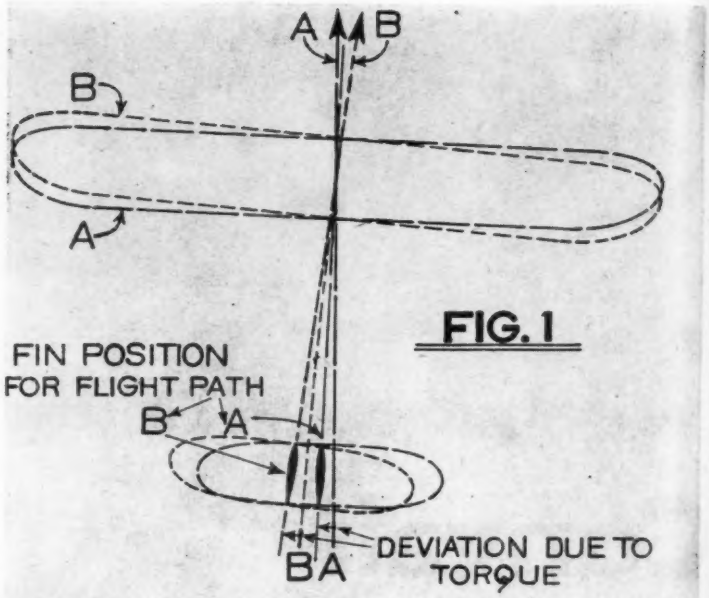


FIG. 1

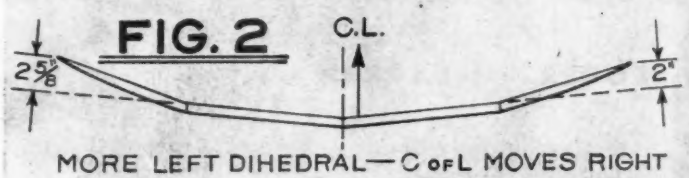


FIG. 2

FIG. 3

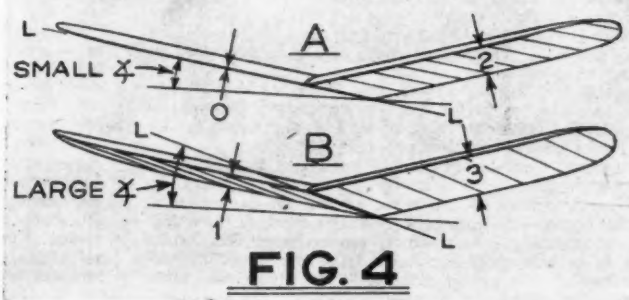


FIG. 4

The "Out-Climber"

by FRANK EHLING

This simple design has proven capable of outstanding results when carefully adjusted

PLENTY of power, a high wing, and a flat glide make this ship an easy model to fly. A rubber powered model gives one a chance to breathe fresh air and not be overcome with the mixtures that present-day gas engines consume. For a real treat, build this stick job and enjoy some fine flying. There are no tricks to it and the beginner will be assured as much pleasure as the more experienced builder, because the high wing and large stabilizer makes for easy flying.

To get started on the fuselage, enlarge the plans; this is easy because the bottom is straight, which is a big help. Build up the two sides one over the other—in this way they will be alike. Cut the crosspieces and cement them in the correct places. Start at one end of the fuselage and work to the other. Add the sheet fill-in as shown on the plan as this will strengthen this part and is a help when winding. Carve the nose plug and shape to fit. Finish the fuselage by adding 1/4" sheet in the rear. Drill a hole in this sheet to take the dowel, making sure it is a tight fit.

The wing mounts are next bent to shape; these wire pieces (shown full size on p. 23) are cemented and bound in place with thread to fuselage, and bound with wire and soldered at the top, making sure the wing can set true when the job is completed.

The fuselage is covered with G M Silkspan as this stands up well and the extra weight isn't noticed.

The wing comes next; it is made in three sections, then assembled. Cut the required ribs and wingtip outlines to shape. To assemble, block up the spars and trailing edge so the ribs are true. When the sections are completed, join with the dihedral gussets, cementing all connecting parts well. Sand the tips and trailing edges so the covering will lay smooth; also go over all joints with cement to be sure of a strong framework.

The stabilizer is made in the same manner as the wing. However, there is no dihedral and the centersection, where the rudder is cemented, is covered with sheet.

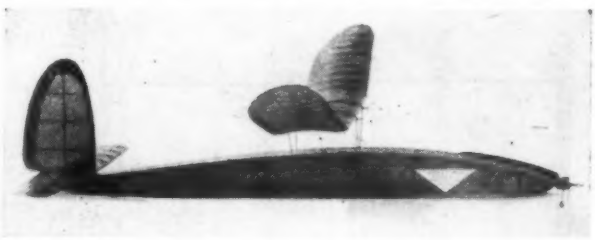
The rudder is next; it is best made by cutting out the outline and cementing all outline parts together. Carve the trailing and leading edges to shape, assemble the ribs on the spar, and cement the unit in, as shown on the plan. The rudder can now be sanded so that the ribs flow smoothly into the trailing edge. Cement the rudder to the stabilizer and make sure, while the cement is drying, that it does not warp.

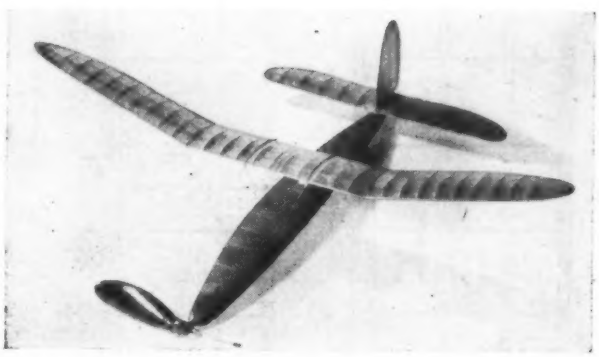
The wing and stabilizer are covered with tissue. After covering this should be water doped first, then when dry, given three to four coats of dope that is thinned out about 50% —this will give a smooth job.

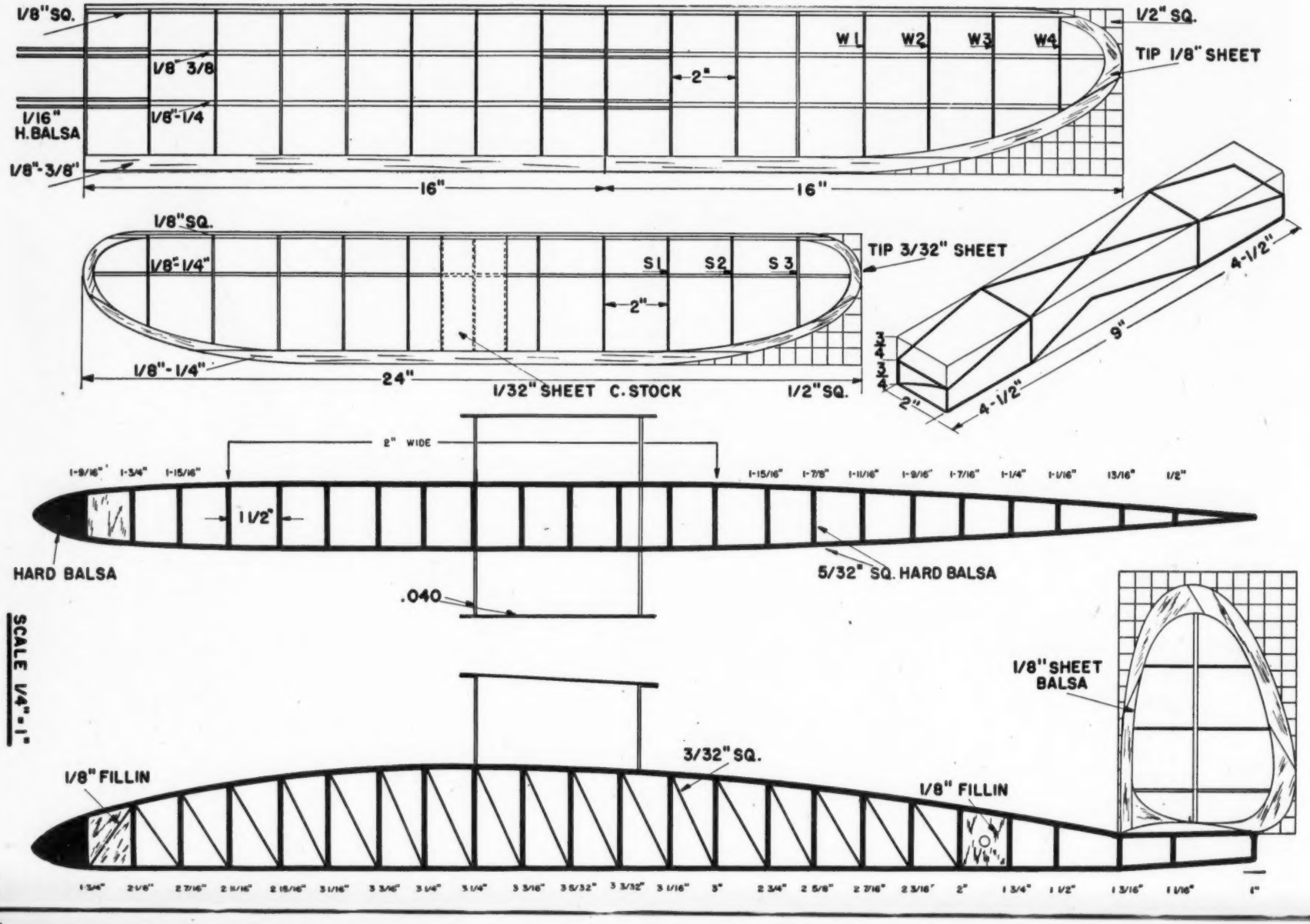
The prop is the heart of the model and we can not take this part too lightly if the model is to fly well. The original model had a folding blade job. However, some of my friends have been using free wheelers and have been doing O.K. in no small way, so take your pick. The prop must be carved and balanced carefully if it is to do the job well. Twenty-eight strands of 1/4" flat will give the ship a climb that will astound your fellow modelers. Use slack in the motor to bring the ship up to contest weight.

Wind the motor a few turns and launch—the model should climb to the right and glide to the left. Use balsa slivers under one edge of the nose plug to get the ship to turn to the right, and offset the rudder to get the ship to turn in the glide. Be sure the model has been tested sufficiently before you try it in a contest; we were flying the original for a long time and then found that the ship could still do better when it was more accurately adjusted.

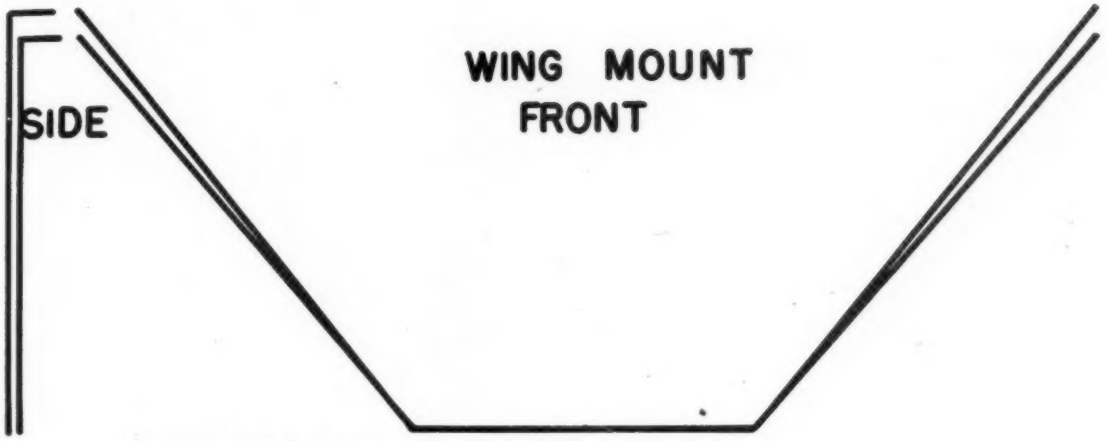
"Hold it Frank, 'til I put in another hundred turns!"



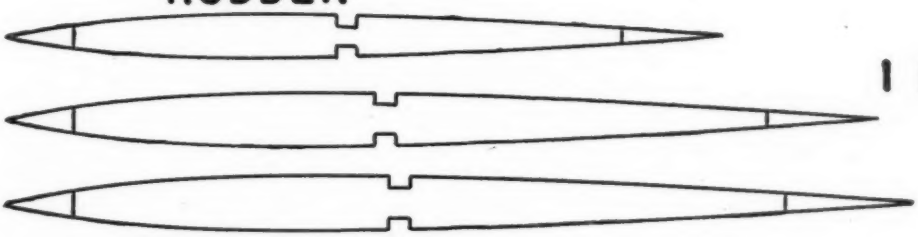



1/8"SQ.
1/8" 3/8
1/16" H.BALSA
1/8"-1/4
1/8"-3/8"
16"
16"
2"
W1
W2
W3
W4
1/2" SQ.
TIP 1/8" SHEET
1/8"SQ.
1/8"-1/4"
S1
S2
S3
2"
TIP 3/32" SHEET
1/8"-1/4"
24"
1/32" SHEET C. STOCK
1/2"SQ.
4-1/2"
9"
3/4
3/4
3/4
2"
4-1/2"
2" WIDE
1-9/16"
1-3/4"
1-15/16"
1-15/16"
1-7/8"
1-11/16"
1-9/16"
1-7/16"
1-1/4"
1-1/16"
13/16"
1/2"
1 1/2"
HARD BALSA
5/32" SQ. HARD BALSA
.040
1/8" SHEET BALSA
3/32" SQ.
1/8" FILLIN
1/8" FILLIN
1 3/4"
2 1/8"
2 7/16"
2 11/16"
2 15/16"
3 1/16"
3 3/16"
3 1/4"
3 1/4"
3 3/16"
3 5/32"
3 3/32"
3 1/16"
3"
2 3/4"
2 5/8"
2 7/16"
2 3/16"
2"
1 3/4"
1 1/2"
1 3/16"
1 1/16"
1"

SCALE 1/4" = 1"

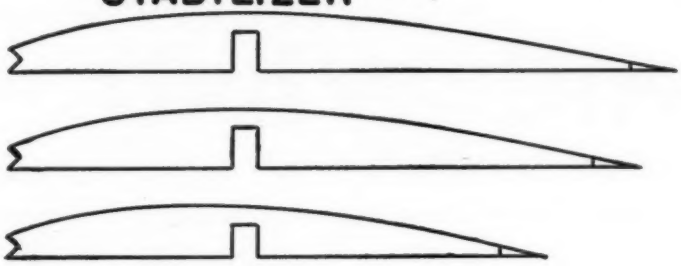


RUDDER



1 EACH

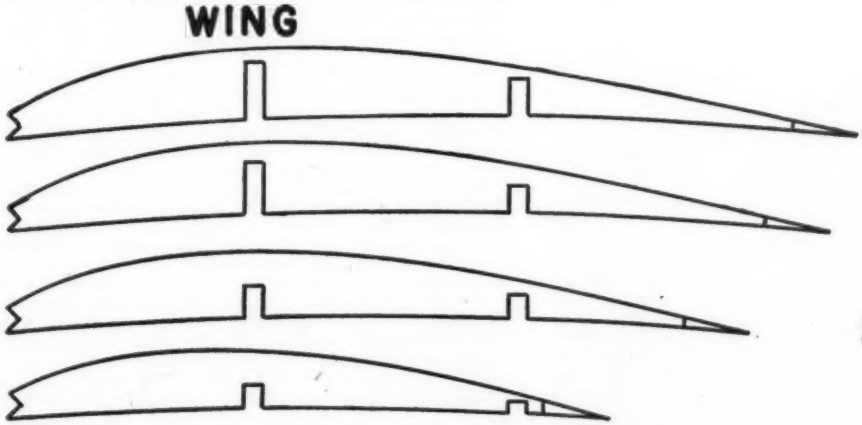
STABILIZER



9 REQ.

2 EACH

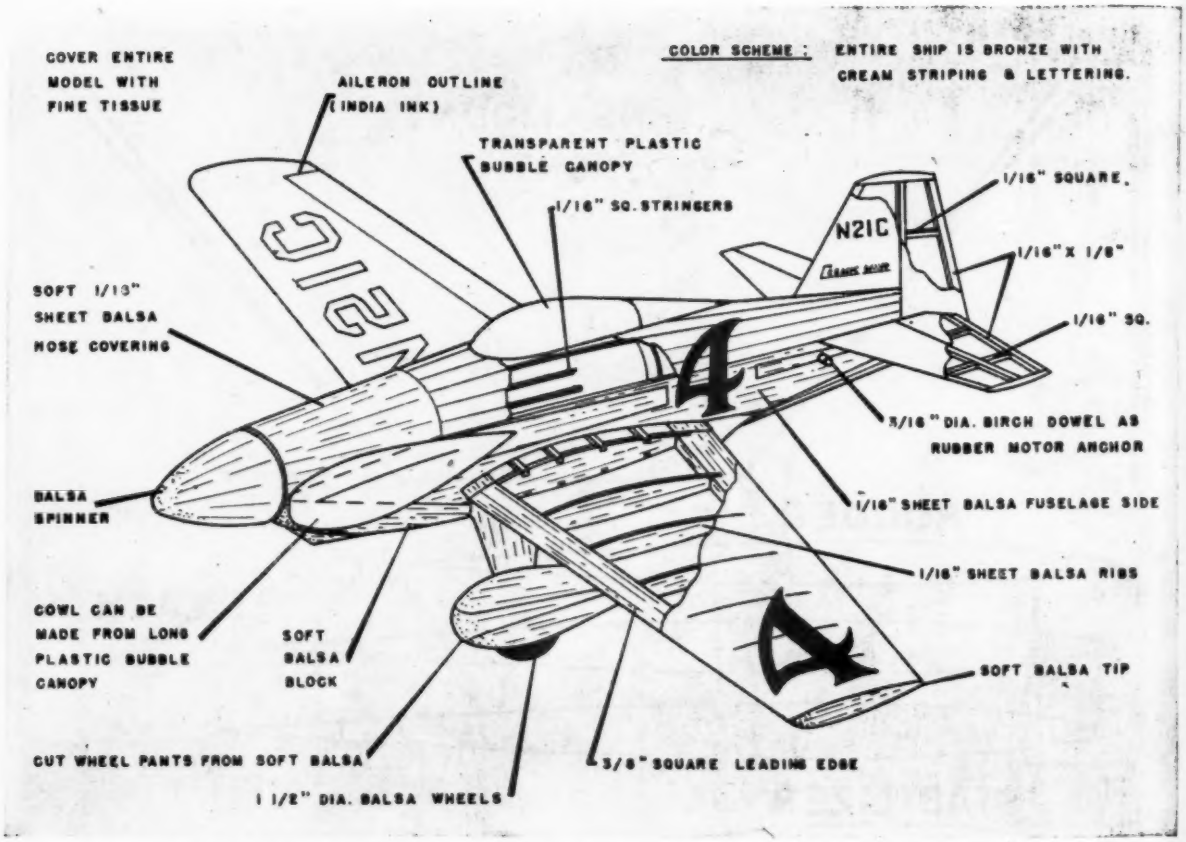
WING



17 REQ.

2 EACH

ALL PARTS FULL SIZE



COSMIC WIND

This makes a fine rubber job, but the plans may be used for any other type model—they are made from official drawings with no outline changes

by WALTER MUSCIANO

ONE of the most interesting and oldest types of aircraft modelling is the rubber powered scale job. Yet modellers in recent years have shown a decided lack of interest in this absorbing activity, although a few outstanding model builders including Struck, Stahl and Lanzo continue with scale models.

This lack of interest on the part of the majority is not without reason. In the old days the "modern" jobs—such as Curtiss *Robin*, D. H. *Moth*, *Polish Fighter* etc.—were perfect subjects for rubber scale models. But now it's different! Let's see you get even 2 minutes from a small scale F4U *Corsair* or other modern plane. You can't? Well, this article describes one that will top most of the modern "good lookers." Tony Le Vier and associates designed and built this sleek job, called the *Cosmic Wind*, as an entry in the Goodyear Trophy Race. Generous rudder and wing area, long nose, and sufficient dihedral make this design perfect for scale rubber flying.

Since its inception the 190 cu. in. Goodyear Race has gradually come to be looked on as the feature attraction at the National Air Races, because it encourages the development of original designs rather than the adaptation of stock military fighters to racing work. Three *Cosmic Winds* were entered this year and No. 4, piloted by Herman "Fish" Salmon of Van Nuys, Calif. crossed the finish line first with a speed of 169.608 mph. Incidentally, *Cosmic Wind* is one of the few all metal designs in its class.

The plans have been drawn half size; all formers and ribs are full size for the builder's convenience. Enlarging the plans is made easy by the preponderance of straight lines. First cut the fuselage sides from 1/16" thick balsa sheet (soft) and attach the crossbraces and nose former (A) in place. Be sure to cut a space for the wing centersection. Cut out the formers from soft sheet and attach only the top ones in place. While this is drying, the stabilizer and rudder can be made by pinning the specified stock to plan and cementing well. Using superfine tissue (not Silkspan) cover the tail surfaces and cement the stabilizer to the fuselage.

Select hard 1/16" square strips for stringers and attach to fuselage top. The top nose section is 1/16" sheet covered.

Now cut out the wing ribs and notch the 3/16" x 1/2" trailing edge (soft) to fit them. Pin the trailing edge to the plan, together with the ribs. Block up the leading edge (soft) to proper height and cement the entire structure.

The wing is made in 2 pieces with centersection to follow later. When the wing panels are dry and soft balsa tips have been added, they are blocked up to correct dihedral angle, and 1/16" sq. strips (hard) along with the leading and trailing edge are cemented in place between root ribs. Apply plenty of cement and let dry overnight. Cover the wing with tissue, then water spray and apply a single coat of dope. Attach wing to the fuselage bottom and don't spare the cement. The nose bottom is cut from a dead soft balsa block hollowed and cemented in place. Now bend the .032" wire landing gear and cement well to former B. Add the bottom fuselage formers and 1/16" strips. Cover the fuselage with tissue (use dope as the adhesive). Use lengthwise strips of tissue; you will find this job easy. Cement the rudder in place. Water spray and dope the tail and fuselage once. Check empennage for warps.

The "cheek" type of cowl can be made from long thin plastic bubble canopies which are available at most hobby shops; they will save the builder time and effort. If bubbles are not available, cut the cheeks from dead soft balsa and hollow to about 1/8" wall thickness. When these are in place install the plastic cockpit bubble. There is no commercial bubble to fit this model but if the builder follows the author's procedure all will

go well. Select a greatly oversize bubble (gas model type) which has the same upper contours as that on the *Cosmic Wind* and cut away the excess carefully until proper size is reached. A little bending here and there will produce a good fit.

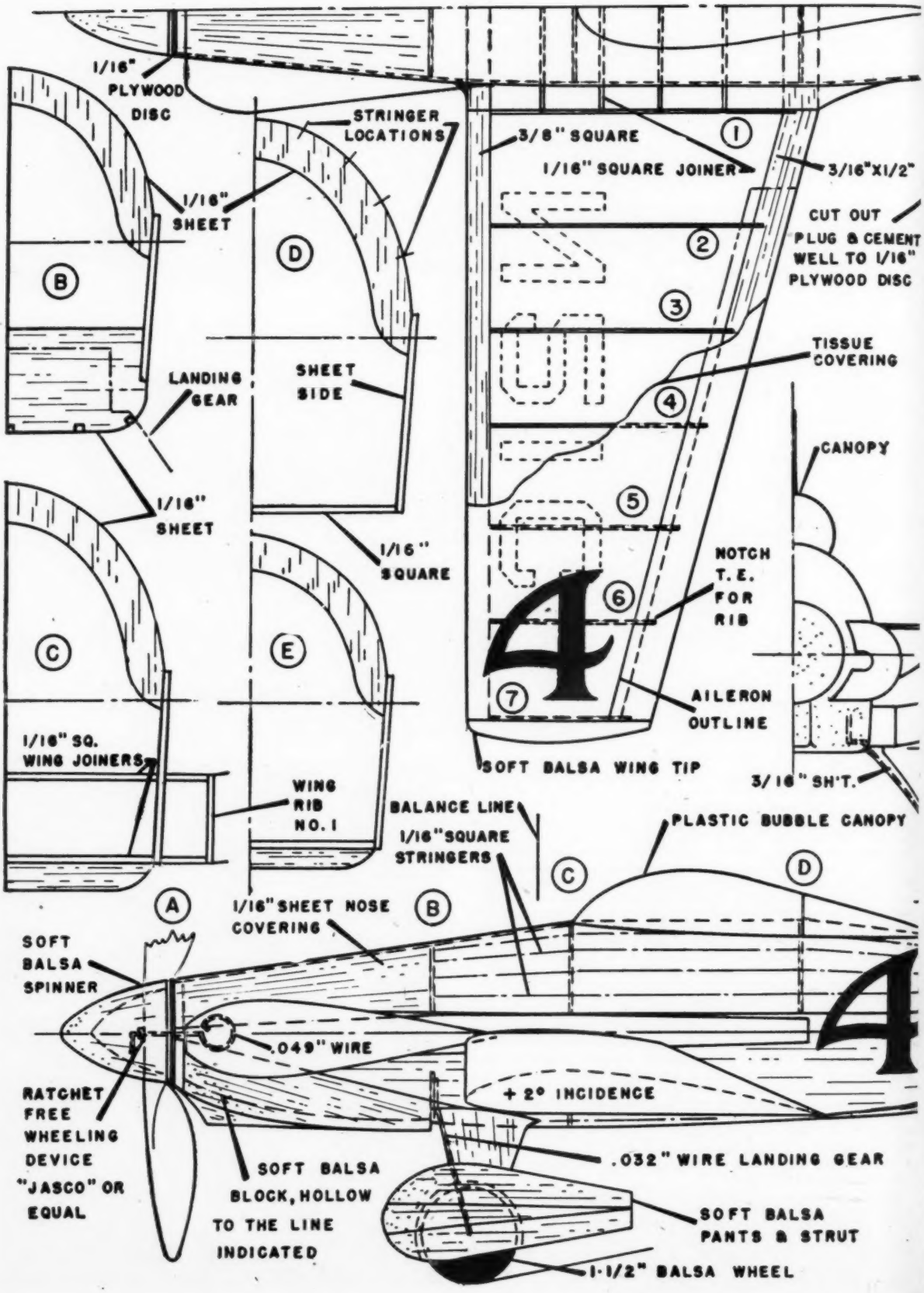
Very soft balsa is used for the wheel pants and landing gear fairing. These are attached after balsa wheels are in place. Use commercial balsa wheels or cut them from 1/4" sheet.

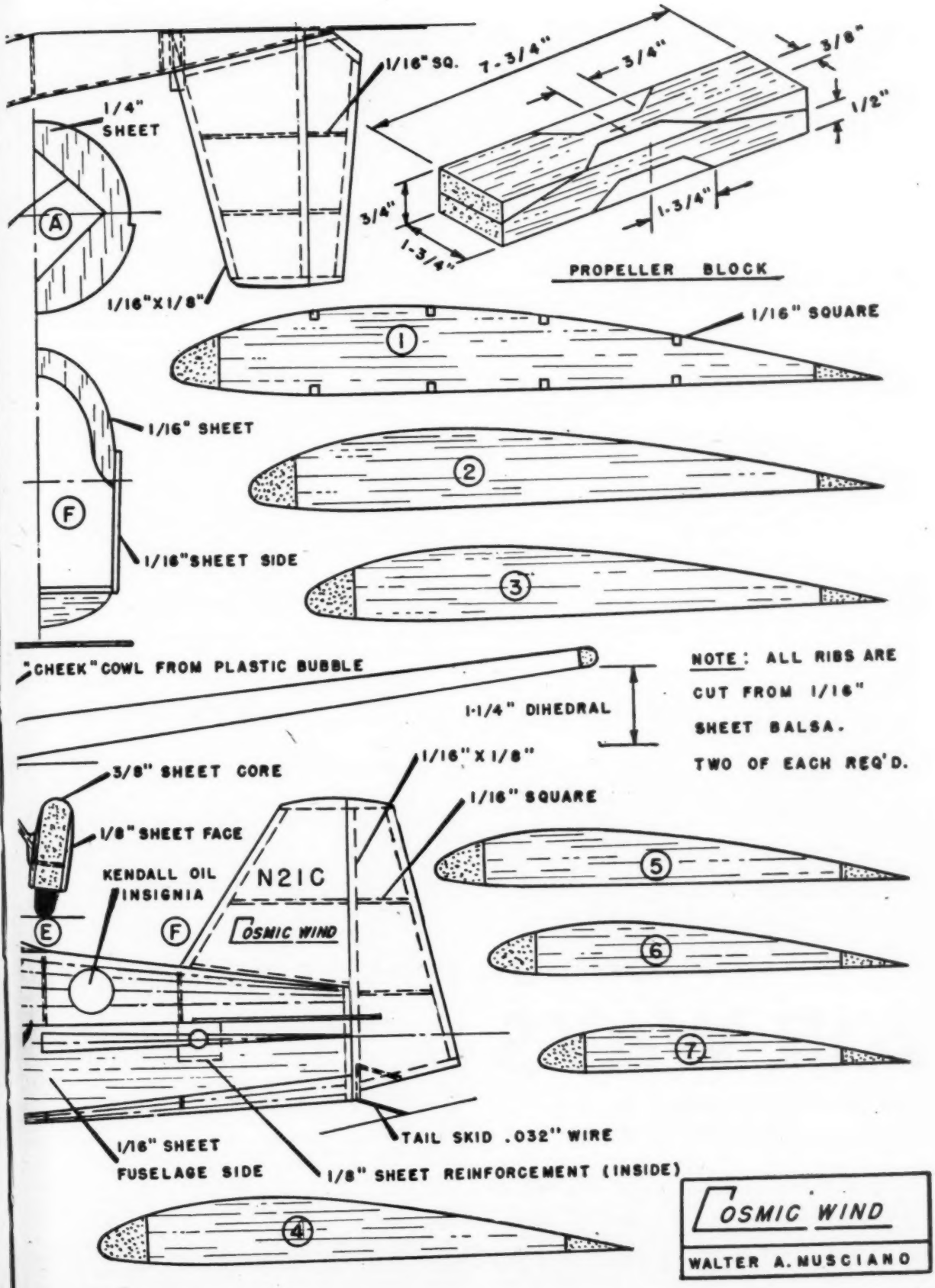
The propeller is carved from medium balsa. First cut the blank to shape with a coping saw, then carve the blades. Take care to maintain as much blade area as possible, and carve a considerable amount of camber in the blades because of the restricted diameter. Dope once and sand smooth. Carve the spinner from soft balsa and hollow as shown. Cut the plywood nose piece and cement the 1/4" sheet plug to it. A ratchet type of free wheeling device was used. The model is wound by removing the rubber from the front shaft hook and slipping it on the winder hook. This was done in order not to spoil the scale effect of the spinner with a protruding winding loop. Use a ball bearing washer and sheath the front hook with a rubber tube to prevent the wire from cutting the rubber motor.

We now have the completed model with one coat of clear dope. If you want endurance and not appearance, use colored tissue and apply 2 coats of clear dope. The original model has one clear coat and one *very thin* colored and is not too heavy.

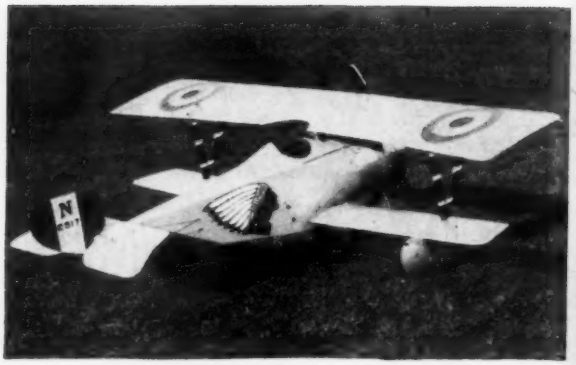
Our model is powered by 8 strands of 3/16" flat brown rubber 2 ft. long, braided to prevent bunching. Lubricate it well. We tried to get a long motor run because we thought the glide would be very steep. The model surprised us with a slightly fast but very shallow glide.

Be sure to balance the model at the point indicated. Test glide from shoulder height into tall grass (at least 2 ft. high) and note glide path. Our model glided perfectly the first try. Continue hand gliding until a flat glide is obtained, warping the elevators to correct the glide. When satisfactory, wind the prop 50 turns and hand launch. Slight right and down thrust were required on the original model.


1/16" PLYWOOD DISC
STRINGER LOCATIONS
3/8" SQUARE
1/16" SQUARE JOINER
3/16"X1/2"
1/16" SHEET
CUT OUT PLUG & CEMENT WELL TO 1/16" PLYWOOD DISC
B
D
2
3
TISSUE COVERING
LANDING GEAR
SHEET SIDE
4
CANOPY
1/16" SHEET
5
1/16" SQUARE
NOTCH T.E. FOR RIB
C
E
6
7
AILERON OUTLINE
1/16" SQ. WING JOINERS
SOFT BALSA WING TIP
3/16" SH'T.
WING RIB NO. 1
BALANCE LINE
PLASTIC BUBBLE CANOPY
1/16" SQUARE STRINGERS
A
1/16" SHEET NOSE COVERING
B
C
D
SOFT BALSA SPINNER
.049" WIRE
+ 2° INCIDENCE
RATCHET FREE WHEELING DEVICE "JASCO" OR EQUAL
.032" WIRE LANDING GEAR
SOFT BALSA BLOCK, HOLLOW TO THE LINE INDICATED
SOFT BALSA PANTS & STRUT
1-1/2" BALSA WHEEL

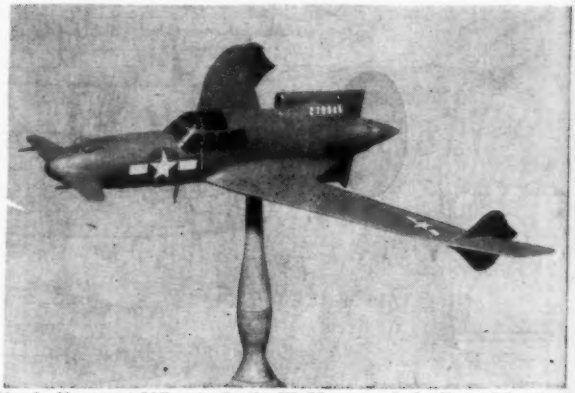

1/16" SQ.
7-3/4"
3/4"
3/8"
1/2"
1-3/4"
3/4"
1-3/4"
PROPELLER BLOCK
1/4" SHEET
A
1/16"X1/8"
1/16" SQUARE
1
1/16" SHEET
2
F
1/16"SHEET SIDE
3
"CHEEK" COWL FROM PLASTIC BUBBLE
1-1/4" DIHEDRAL
NOTE: ALL RIBS ARE CUT FROM 1/16" SHEET BALSA. TWO OF EACH REQ'D.
3/8" SHEET CORE
1/16"X1/8"
1/16" SQUARE
1/8" SHEET FACE
KENDALL OIL INSIGNIA
N21C
COSMIC WIND
E
F
5
6
7
1/16" SHEET FUSELAGE SIDE
TAIL SKID .032" WIRE
1/8" SHEET REINFORCEMENT (INSIDE)
4
COSMIC WIND
WALTER A. MUSCIANO

No. 1. Julio Dumo flies his *Barnstormer* in the Philippine Islands

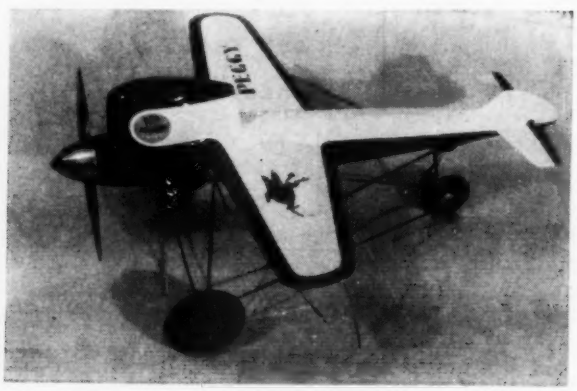


No. 2 Scale *Nieuport* of Paul Van Sant has Anderson *Spitfire* power

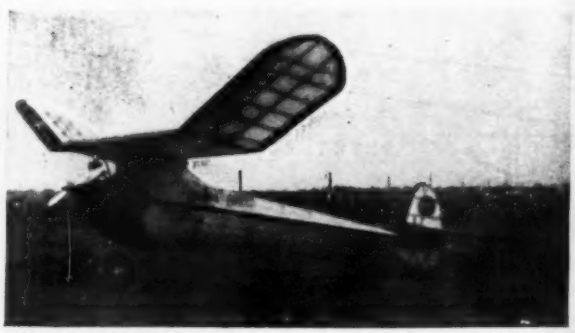
No. 3 Free flight *Fokker D8* by Floyd Lahue has 38" span



No. 4 Very neat ¼" scale *Curtiss XP-55* was made by Howard Smeltzer



No. 5 R. Pauley uses glo-plug in this McCoy 49 powered original



No. 6 This is *Missfire*, built to C. H. Grant's theories by D. T. Hoyle

AIR WAYS

News of model airplane experimenters all over the world

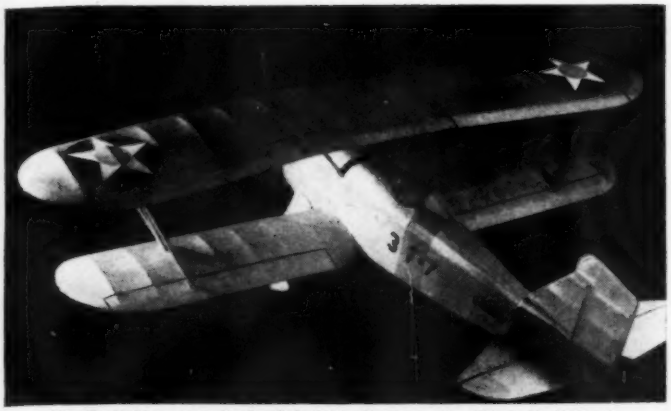
PHOTOS NEEDED. Periodically we request our readers to send in photos of their models for use in *Air Ways*. While we are now receiving photos by the dozens, unfortunately they are predominately of one class—controline models. We receive a few shots of free flight gassies, a few of nonflying exhibition types, but almost none at all of any sort of rubber powered or CO2 models. We know there are lots of planes made, other than controliners, but we have never been able to find out why their owners aren't proud enough of them to send us pictures.

We are most interested in original designs in any category; oddities, such as helicopters, channel wing types and the like are also of great interest. Scale models of any kind, particularly of planes not so widely modeled (we already have too many *P47's, Navions, Mustangs,* and the more common WWI types) are needed, but if you produce one of these common types as a free flight gassie, then it would be of definite interest.

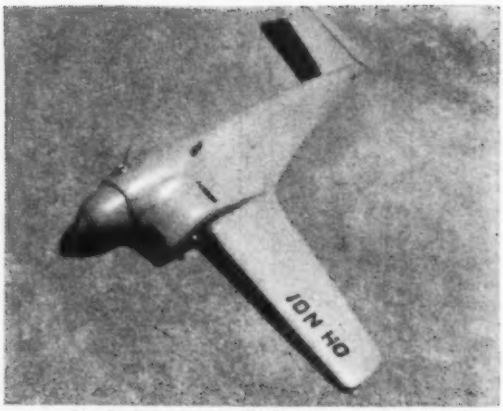
In general, we do not use photos of kit models in *Air Ways;* readers follow this page mainly to get original ideas from other builders, and of course the kit model designs are well known to all.

When you plan to send your photos to *Air Ways,* remember that the ones which come out best when printed in the magazine are: glossy prints, sharp and well focused, in size 2-1/4" x 3-1/4" or more—the larger the better. And try to have the background *contrast* with the model and not blend with it—thus, a dark model should be photographed against a light background, etc.

It is not necessary to have expensive photographic equipment to produce the type of shots we need for *Air Ways.* With reasonable care given to lighting and background you can obtain fine results from the simplest box cameras—so go to it



No. 7 Rubber scale *Seahawk* built in Singapore by AC1 J. D. McHard



No. 8 Here we have *Oh No!* by David Friend

No. 9 From Denmark, Kaj Frohind sends a pic of his very trim diesel powered model

No. 10 Ed. Seward doesn't name this Fokker *Tripe* pilot

No. 11 *Meanderer*, an experimental twin engine ship by Ray Malmstrom

No. 12 Luther Bullock and his *Night Hawk* glider

and send us some *good* pictures of those gliders, rubber models, or unusual designs of any kind.

THE RULES ARE IN everyone's mind just now, since our AMA representatives are busy collecting ideas and formulating opinions, ready to draw up the new 1949 contest rules. Most everyone has ideas on what should be done about free flight gas or U-control; but one type of model we don't hear too much about is the hand launched glider—both indoor and outdoor. This class is of especial importance because the beginner can get more results from such a glider, with less time and money spent, than from any other model.

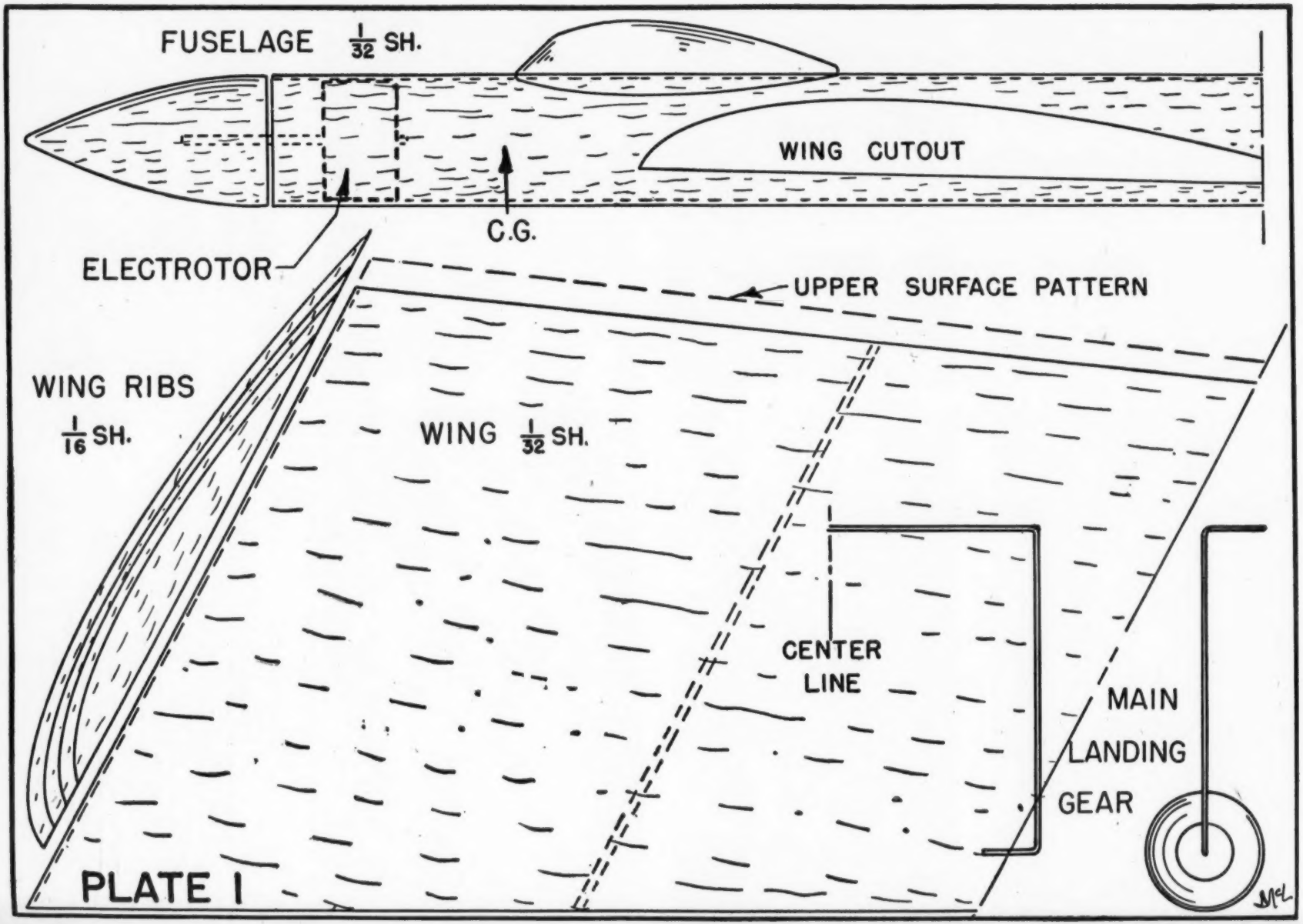
Unfortunately, many beginners (and experts as well) do not possess the steel spring arm needed to heave the little gliders to record breaking heights. The suggestion has been advanced that the official contest rules be changed to allow use of a rubber catapult to launch the models; this would give everyone a chance to compete and not limit flying to the modeling supermen. Of course, it can also be said that the strong-arm boys, since they have the strength and skill to heave their gliders the highest, fully deserve to drag away the hardware. What do *you* think? Send your answers direct to the AMA Contest Board.

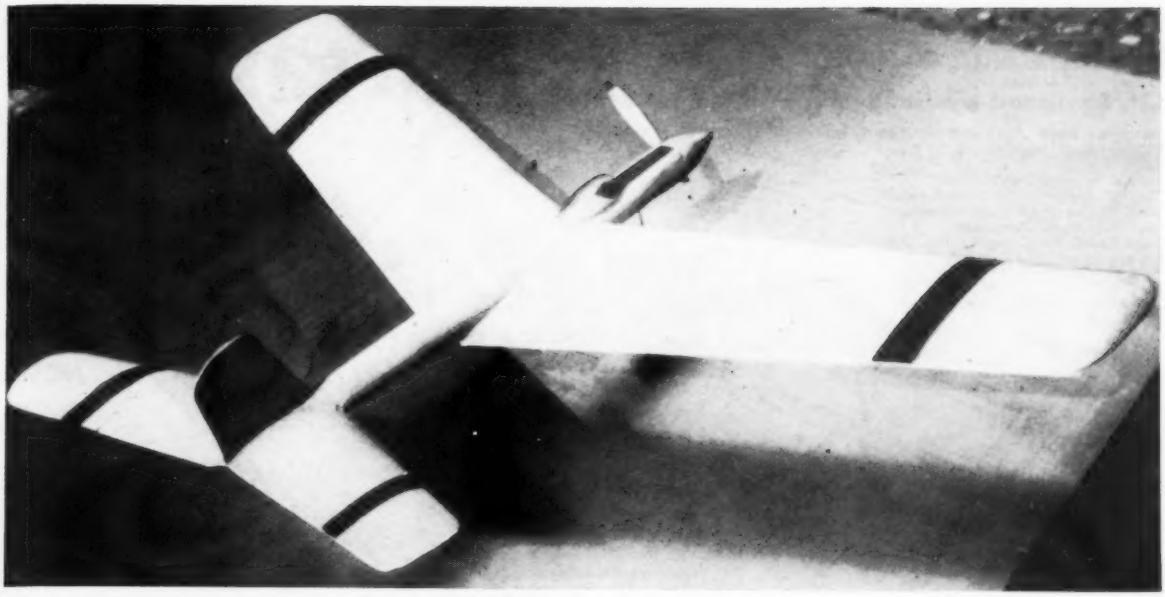
HIGH FLYERS. We hear occasionally from readers located in areas of high altitudes who have difficulty in securing reliable model engine operation. Some complain their engines lack power or are hard to start—others say their trouble seems to be mainly in lower prop efficiency.

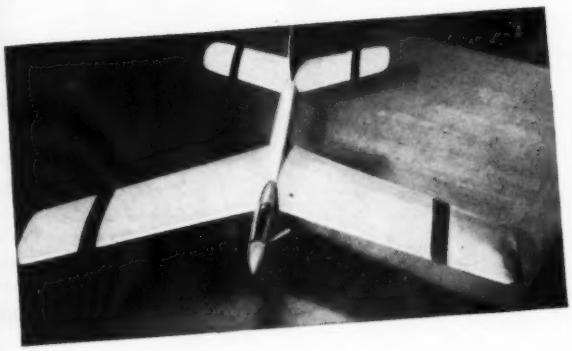
In a recent letter, Robert Carroll of the *Anaconda* Modelers' Assn. (Box 1000, Anaconda, Mont.) writes that the elevation is 5342 ft., but that they have no engine trouble that can be blamed on the altitude. They have hit the following unofficial speeds: Class A, 88 mph; B, 133 mph; C, 138 mph; D, 123 with engine and *192 mph* with jet. Bob says the jets really put out on a hot day in their altitude, and they look for 200 mph plus next year. The engines, fuel, props and models used are all quite conventional, all the speed records being held by kit models.

We suggest that other modelers in high localities having

(*Turn to page* 52)


FUSELAGE 1/32 SH.
WING CUTOUT
C.G.
ELECTROTOR
UPPER SURFACE PATTERN
WING RIBS
1/16 SH.
WING 1/32 SH.
CENTER
LINE
MAIN
LANDING
GEAR
PLATE I





Mr. Sleek

by J. L. McLARTY

Electric power makes this an ideal model for indoor flying

MR. SLEEK is a purring monster; inside the slim fuselage, hidden like a jet engine, is an *Electrotor*—an electric motor of astounding power for its size and weight.

With a design of proper proportions the performance possible is more like that of a large aircraft than is any other type of U-control. By varying the voltage from 3 to 12 volts the model can be made to stand with engine idling, taxi to its takeoff point, take off with a burst of power, and exhibit a wide range of flight speeds. Changing battery polarity will reverse the direction of motor rotation. This allows you to be an expert at taxiing and short landings—otherwise possible with only the latest transports using reversible pitch propellers.

There is no fuel tank to keep filling, or capsule to replace; also, there are no starting troubles. You can taxi or even fly in your home, if outdoor weather is prohibitive. If turning in circles makes you dizzy, use a center post with wires to the outside of the circle. The design itself is adaptable to CO2 power of the *Campus A-100* class.

All parts are shown full size on the plans. To obtain the highest possible efficiency the model should be kept as light as possible.

The fuselage is made from medium grade 1/32″ x 3″ sheet balsa. To form, soak the balsa in warm water and bend around a broom handle. Wrap this well with a cloth till dry. Remove and taper the joint to obtain shape shown on Plate 2. Cement the joint along its entire length; use small rubberbands to hold while drying. When dry, make the cutouts for the wing and stabilizer as shown on plans. The *Electrotor* should fit snugly in the front of the fuselage.

The wing is of 1/32″ soft sheet balsa. Full size of patterns of upper and lower surfaces are shown. Place the bottom sheet on a flat board and install the ribs, positions of which are shown dotted on the plans. Next cement the upper surface leading edge in place on the lower leading edge. When this is dry, spread cement on the rib tops and trailing edge and wrap the upper surface over the ribs, holding it in place with pins. For greater lightness the lower surface may be covered with tissue instead of 1/32″ balsa.

The stabilizer is of 1/32″ soft sheet balsa and is similar in construction to the wing. Cover the bottom with tissue. The elevator is on one side only, with the control horn beneath.

The fin is one piece of flat 1/32″ sheet balsa and is not offset. It is shown on Plate 2.

The landing gear is tricycle mainly to take advantage of the taxiing possibilities of this model. It is of .040″ piano wire. The wheels are balsa 1 in. in diameter; they should have eyelets or washers, and should turn very freely.

The control system is conventional, excepting that the control plate should be wood or fibre. This is to insulate the flying wires from one another since they carry the current to the motor. The control plate should be mounted at the leading edge of the wing at its center. 1/32″ wire was used to actuate the elevator horn. The flexible leads to the motor should be lightly soldered. The control wires should pass through small tubes at the trailing edge of the wingtip.

The spinner was turned of very soft balsa. The propeller is one bladed and low pitched. It is one bladed in order to distribute the motor thrust over as large an area as possible. Carve prop as shown on Plate 2 from medium balsa. Fasten a brass plate to the stub end and balance with drops of solder. Cement into the spinner. Be certain the spinner is exactly centered and turns truly on the motor shaft.

Use the pictures for assembly details. It is not advisable to apply more than one light coat of dope to the model.

The motor is rated at 6 volts but operates without apparent damage on 12 volts. Eight flashlight batteries in series, with a switch, is quite satisfactory. Changing battery polarity and tapping for several voltages to obtain varied control are quite straightforward.

Control wires should be made from No. 30 to 36 gauge enamel coated copper wire. Try 15 feet or shorter lengths at first. The model can be carrier launched and lines let out gradually or taken off if a smooth place is available.

The possibilities of control with this model are many, so go to it!

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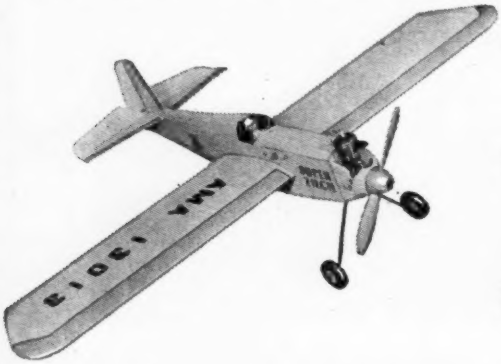

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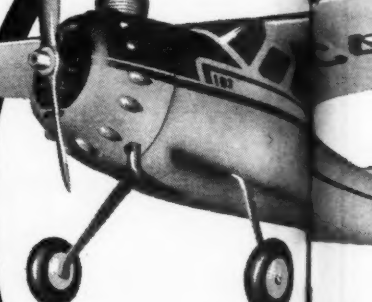
MOST [P]LA[NE] NOW A [BER]KELEY

Ces[sna] 195



36" Wingsp[an] .49 E

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Kit includes all ready-cut bals[a] [...] PLASTIC metal hardware, wheels, and f[...]bers and

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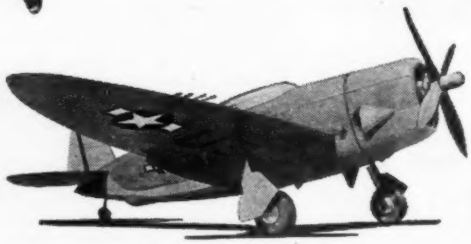

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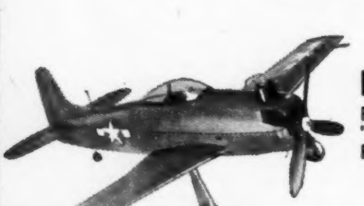

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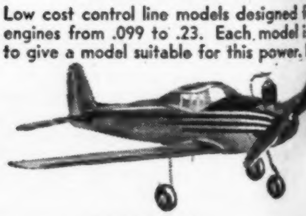

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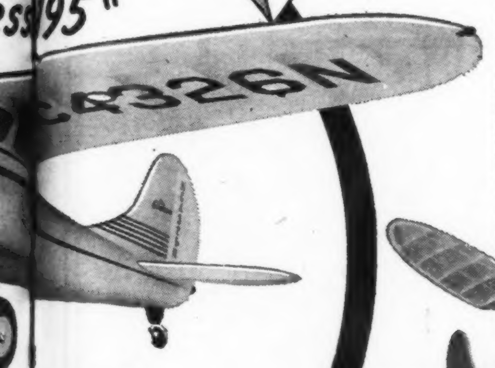

...spa... to .49 Engines

...New ... requires no additional fitting or ...his b...

...bals... PLASTIC COWL. Complete ...and f...mbers and striping.

...plete...cated Kit

...5

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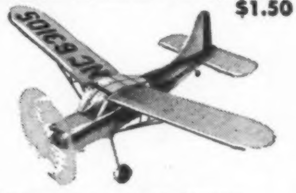

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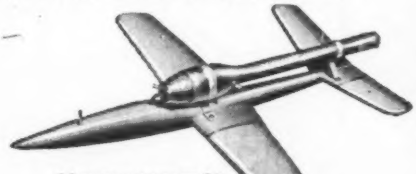

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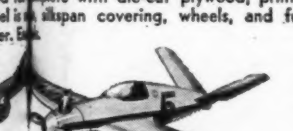

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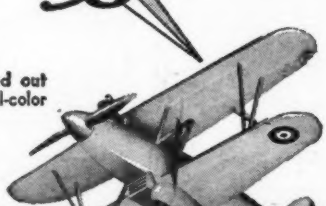

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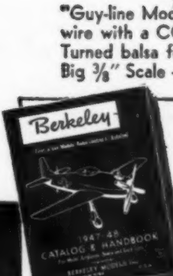

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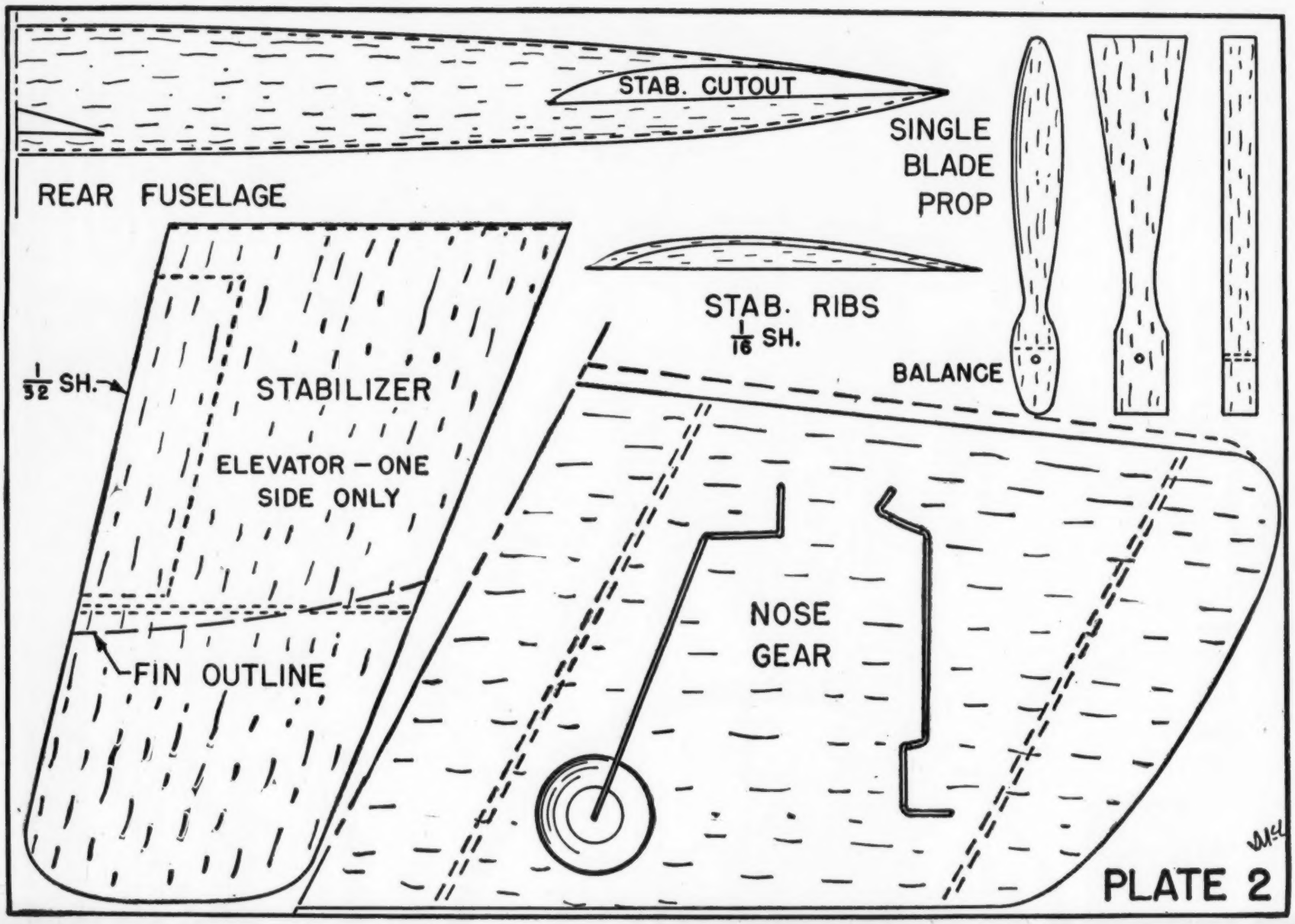

STAB. CUTOUT
REAR FUSELAGE
SINGLE BLADE PROP
STAB. RIBS 1/16 SH.
BALANCE
1/32 SH.
STABILIZER
ELEVATOR — ONE SIDE ONLY
NOSE GEAR
FIN OUTLINE
PLATE 2

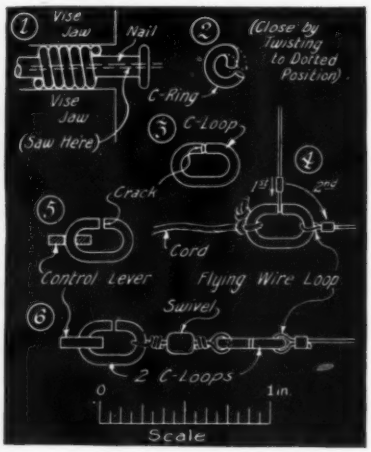
FLYING WIRE CONNECTORS

by RAY RUSHER

FLYING wire swivels of the kind having safety-pin hooks are convenient for connecting U-Control flying wires to the cords that extend from the control handle and from the control lever at the plane—but since the wire of the hook is small in diameter it soon cuts the cord in two. One remedy is to install rings of 1/8" to 3/16" inside diam. and made of No. 14 galvanized iron wire on the cords and connect the hooks to them. As No. 14 wire is considerably larger in diam. than the wire of the hooks there is much less wear on the cords.

Another method is to cover the wire of the hooks with plastic sheaths 1/16" to 3/32" in outside diam. 1/2" to 3/4" lengths of insulation stripped from plastic covered electrical or clothesline wires are quite suitable and usually easier to get than plastic tubing of the desired size.

If you select the first method, the rings can be quickly made in quantity by tightly



winding a length of No. 14 wire on a nail and holding the coil in a vise as in drawing 1. Then saw across the coils as indicated by dotted lines, using a hacksaw having a fine tooth blade. This separates the turns of the coil into individual C-Rings shown at 2.

File the ragged ends of the C-Rings smooth and close the ring, twisting it to make the ends match each other. Finally, solder the ends together and smooth off the excess solder with file and sandpaper so the cord can't catch in the crack.

In place of swivels with safety-pin hooks and rings, plain swivels and C-Rings (or more properly "C-Loops") of the kind shown in 3 may be used. They are elliptical in shape and are open at one side so the loop of the flying wire can be threaded through the crack while held at right angles to the length of the loop as in 4. The crack is only .001" or .002" wider than the diam. of the flying wire, so that after the loop of the flying wire is in the C-Loop it seeks a seat at the end of the C-Loop and during normal operations will not come back out through the crack. Thus the crack serves as a ready means of connection without the necessity of opening a safety-pin hook or operating some other type of connection.

Most of you modelers will immediately doubt that the C-Loop will hold its shape due to centrifugal force when flying. The author has tested dozens of them and found that a pull of 60 lbs. is required before they will open even .001" so there is plenty of leeway as a safety factor.

C-Loops can be installed in a variety of ways. Control cords can be tied to them as in 4 or they can be threaded through holes in a control lever (5) before closing the loops. Drawing 6 shows a combination of control lever, swivel and flying wire.

The C-Loops are made by winding No. 14 wire around a piece of strap iron 3/32" x

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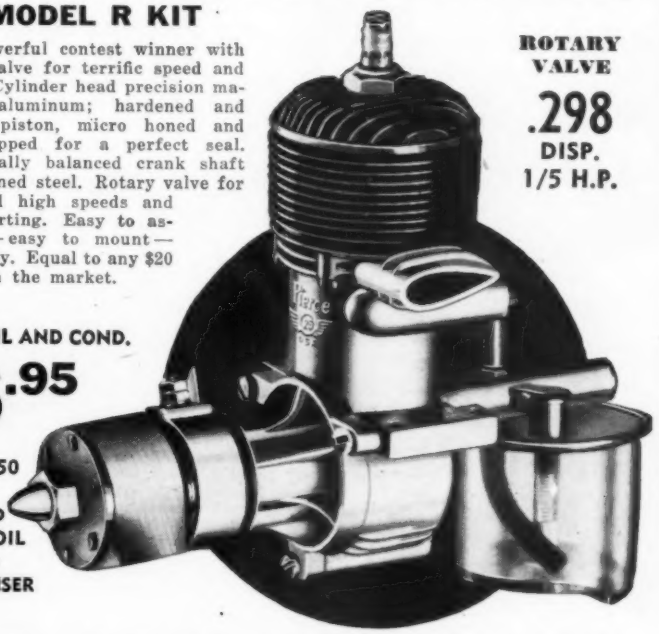

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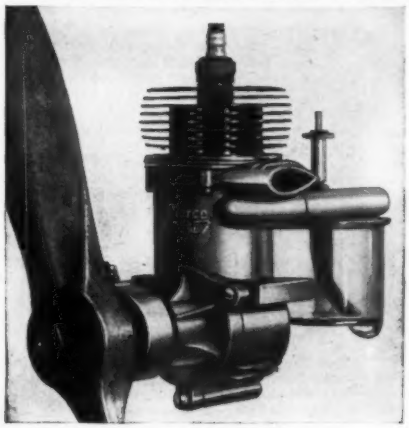

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Having tried many types of connectors, the C-Loops were found a practical idea and convenient as well as simple to make and connect with. We believe you will agree after making and trying them.

How Good Are AMA Rules?

by C. O. WRIGHT

AMA President

RULES for building and flying model aircraft will probably never completely please any *one* modeler, because the rules are an expression of majority opinion. Each modeler should however be generally satisfied with rules, or he should make his position known and try to induce others to join him to bring about a change. If there is general satisfaction, the rules are good. They must be constantly studied and corrected in detail, as experience convinces the majority that changes are in order.

A number of modelers were asked the question. "Why do we have AMA rules?" One replied that rules were designed to pester the modeler. On second thought he admitted that he would be lost both at the workbench and on the contest field if there were no rules. He also said that with a slight change here and there the rules would be to his complete liking. Most of us are much like that modeler. In general, we think the Academy rules for ships and contests are good, but we reserve the American right to try to change them when we think they need changing.

If it were not necessary to have rules for the building and flying of model airplanes there would be much less reason for having a National Academy of Model Aeronautics. It would indeed be a pretty kettle of fish if contestants were to journey afar to a meet and find the rules had been set by the local contest director, with the result that their ships were outlawed or seriously handicapped. The first reason we need AMA rules is to assure fair and even competition, with the possibility of setting national records. Short of national rules this would be impossible.

RULES ARE FOR SAFETY—Another reason for rules is the safety factor. It would hardly do to fly a Piper *Cub* as a model airplane. Likewise, it would not be safe to fly a big speed control job on fishing line. It is a lucky thing for the modeler and the public that safety is a prime factor in rule drafting when the Contest Board finally writes the regulations.

Rules also serve to standardize, within reasonable limits, the models in the different categories. National records have meaning only because the rules set these standards for building and flying. Likewise, the model industry could hardly exist without the standards the rules set. Motors are designed with the rule classifications in mind—and so are model kits. We must always remember as modelers that we are greatly indebted to the industry in many ways. A healthy industry helps us carry on our favorite hobby. We should think twice when we alter the rules drastically lest we damage the manufacturers and dealers who furnish the model supplies.

Consideration should also be given to what a rule change will do to existing ships. The increase in power loading this year did not obsolete last year's jobs as some of the rule changes in former years have done. Modelers shifted motor sizes up the scale or loaded the old ships to meet the increased power loadings. Reasonable consistency from year to year is desirable so the work of past seasons will not be needlessly junked.

WHAT MAKES A GOOD RULE?—The rule should have a definite purpose: that of fair competition, safety or desirable standardization. If it fills its purpose to the reasonable satisfaction of the great majority of modelers, it is a good rule. After rules for a special category are well established (like the indoor category) they should not be changed for light or transient reasons. In the newer categories, such as stunt control and radio, more changes may be expected until these categories become better established.

There are other requirements of a good rule. Simplicity is highly desirable. A rule which requires so much time at the processing table that the meet is slowed up is a questionable one. The automobile of 1917 had twice as many parts as the 1948 model and ran only half as well. The same thing can happen with rules governing the model airplane. This year free flight gas rules were simplified to the great joy of the modelers and the contest directors, when only power loading was specified. Before the contest season was well on its way we learned that the old crossection rule was much ado about little or nothing. It made no apparent difference when the hardware was handed out if the model had a full cabin or was a pencil bomber. Likewise, the wing size was relatively unimportant. The fellows who built them small got height on the climb but less on the glide. The floaters climbed not so high but glided slower. Six of one and half a dozen of the other, with needless hours of measuring no longer necessary at the processing line. (Remember the hours of standing, sitting and squirming in that old processing line? I used to say if you got your ship through that intact, you had a good chance of taking it home in good shape.) Power loading this year furnished all that was needed for fairness, safety and standardization at the meets.

A good rule also will leave the door open for experimentation. We want only a *reasonable* standardization. The new free flight gas rules meet this requirement perfectly. The builder, so long as he has a ship that weighs according to the ratio of at least 10 oz. for each 1/10 cu. in. of piston displacement, is free to build his ship as he likes. He can make the wing large or small; or he can make a flying wing if he likes with no fear that some slide rule "expert" will measure the wing area, more or less accurately, and require more weight. It was forunate that back in the days of Bassett and Brown the rules did not specify a rubber motor, for the gas model engine might never have been developed. When new discoveries or developments come, new rules or new categories may be necessary, as when free flight gas was added. We should be careful and not stifle experimentation by too drastic a standardization. This year's rule on CO2—one pill only—is an excellent rule for that category at this stage of development.

SHOULD THE RULES BE CHANGED FOR 1949?—The Contest Board had a most interesting open meeting at the 17th Nationals in Olathe. It was apparent that control rules were the least satisfactory. This of course was to be expected as control flying is relatively new and great developments are being made in that category. Perhaps the greatest concern was over safety. New fuels are softening cement, and

(*Turn to page* 38)

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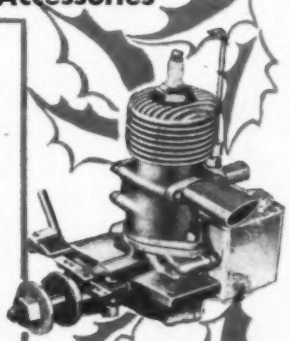

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motors are flying away with their bearers. Speed is exceeding anything thought possible two years ago. Can rules be drafted to solve this problem? The members of the Contest Board are at work and the 1949 rules for control speed doubtless will attempt to make control speed safer.

Developments in control precision and stunt have likewise been great. A chief difficulty here is the judgment of the official. It is not just a matter of clicking a watch. The official must decide if the model performs according to the rules on a loop, and what constitutes a vertical dive, etc. Can rules be drafted to help him? Then, too, can new maneuvers be designed? If not, many of the hot boys will be able to do everything in the book on every flight. Then where is your contest?.

LET THE CONTESTANT DECIDE ON LAUNCHING—A most interesting suggestion was offered and received a very favorable vote at the Olathe session of the Contest Board—give the individual contestant a choice at each flight in free flight gas, of hand launched or rise off the ground. If he chooses H.L. he has only 15 seconds for the motor run (can be without landing gear); if he is brave and wants to R.O.G. he gets a 20 second motor run.

By far the greatest problem in free flight gas is the launching and motor-run time. At Olathe the contestants voted, with wind 5 to 10 miles, to hand launch with 15 second motor run. Some would have preferred R.O.G. with 20 seconds. (The floater boys from Indiana doubtless would have liked this, as would yours truly on B and A days.) There is always the problem facing the contest director of a suitable takeoff surface. The weather, especially wind, also complicates the problem. If the director rules R.O.G., some will be unhappy over the runway or the weather. If he orders H.L. and cuts the motor run, which is logical in that case, others are displeased. Why not solve this one by leaving the contestant the free individual choice? Take what you like boys, 15 seconds hand launched, 20 seconds R.O.G. Either to count on records. I don't know what you think of it, but I like it both as a contestant and as an official.

The decrease in number of lost ships this year speaks well for the ten minute maximum time rule and the development of dethermalizers. Some, including your author, would like to see this maximum lowered to six or even eight minutes. If you get more than six minutes time with your hopeful you can chalk it up pretty much to a lucky thermal, or to a timer with patience and excellent eyesight. A six minute limit, counting the third flight full time if necessary for high time and records, would be another step to even competition. It would be safer too—not so much racing in cars chasing models, and not so much chance of reaching the pasture where the dangerous bull lurks. (Easier also to set dethermalizers for six minutes.)

YOU CAN HELP DRAFT THE RULES—Every member of the Academy should feel a responsibility to help formulate AMA rules. First of all your local club should have discussion meetings on the subject. If possible secure club recommendations. Of course opinion from many is of more value than the opinion of one. Then send the club's opinion, and yours too, to the members of the Contest Board in your district. There are two, whom you elect in your district. Tell them what you would like. And finally, be a good AMA citizen and vote on proposed rule changes and members of the Contest Board in your district each year. The ballot will be coming soon, don't lose it in the balsa shavings on your workbench, but fill it out and mail it in pronto. Are the AMA rules good? You bet they are for *we* make them!

PHOTO CREDITS

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11	*Above*	Irwin Polk
	Center	Wm. Winter
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Let us call your attention to the fact that the new "M" (Master) series models will contain re-issued kits, identical in contents to the SF kits which made the name CLEVELAND-Designed, world f-mous. Modellers of long standing will recognize the two photos to the left and right. They publicized our original "SF" Gee-Bee and Fokker D-7 kits. The new "M" kits build the same identical model, and contain the identical information on their plans. Materials are top quality and complete (less liquids) with up-to-date data on the installation of new types of power, added. We are certain that many modellers will be intrigued again by these kits, as they were years ago. Newer model builders will want to gain a firm footing in aviation history by building these C-D re-issued "M" kits, as well as models of later planes, such as the "Shooting Star" (below) and the $1.75 Navion and $1.50 Bonanza (both 25¼" span). Our reputation as the world's oldest "same management" model kit manufacturers likewise stands behind these latest kits.

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This extremely popular series of models are all 30" wingspan, (except the DC-3, which is 36" span). The main business of this series is to *fly* and to fly well. They are all flight-engineered, and contain the benefit of our 30 years of model designing. They are light, simple to construct, and yet are sturdy when banged around by "hard flying. While they are primarily designed for rubber powered flying, they are ideal for the C-O-2 motor, with which we have had huge success in powering them, and include information on its installation whenever practicable. We find many modelers strengthening the general construction, (beefing-up) and using them for control flying. It is next to impossible to find a better kit, even if you were willing to pay more than the astounding low one dollar that is the uniform price for all "IT" kits.

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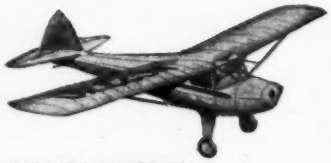

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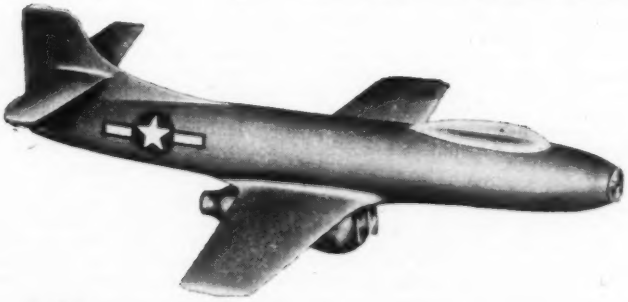

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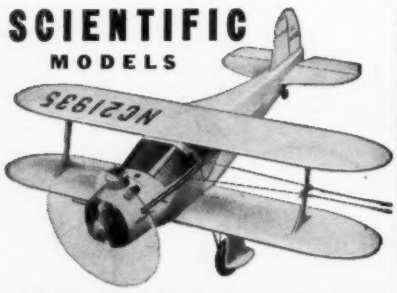

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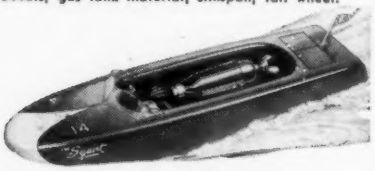

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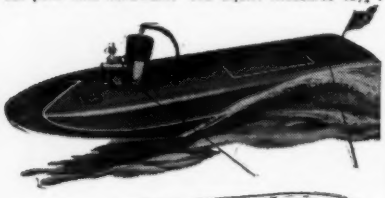

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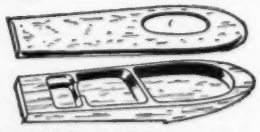

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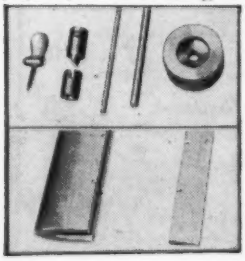

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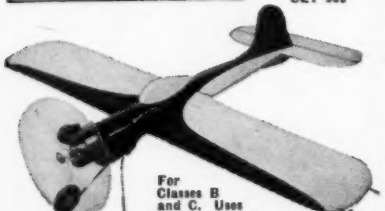

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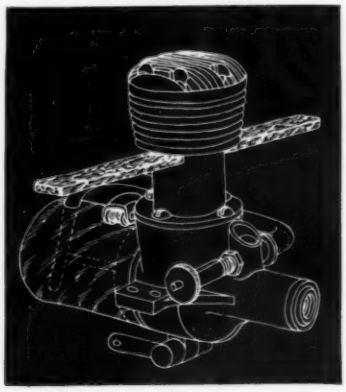

THE *Mite* engine has a rear (prop drive) washer which drives frictionally from a cone-shaped shoulder of the crankshaft; this is a problem as far as installing the prop at the correct angle is concerned. The friction drive is an excellent way of preventing the roughened face of the washer from chewing the prop hub when the prop becomes loose and slippage occurs at the friction joint rather than between the washer and prop.

Since the prop drive washer is not positively locked against rotation relative to the crankshaft, as in most engines, it is almost impossible to locate the prop accurately (vertical when the exhaust port closes on the compression stroke during usual counter-clockwise rotation). Initial tightening of the prop screw has to be against compression as there is no other way, except as explained below, to hold the crankshaft against rotation. When depending on compression it is difficult to guess the position of the piston so as to have the prop at the correct angle for most efficient cranking of the engine.

A simple remedy is to use a hardwood strip 7/64" x 5/16" x 3" or 4" inserted through the exhaust ports of the engine as shown in the drawing. An ice cream bar stick serves quite well. Let the piston come up against the strip and have the prop approximately *horizontal* while turning the prop screw clockwise. The screw can be tightened to the proper degree without any damage to the engine, and when the prop is subsequently rotated counter-clockwise it will be found in the vertical position as the exhaust ports close.

Be sure the strip is clean before inserting it, as any sand or even dust on it may get inside the cylinder and score both cylinder and piston.

The piston-holding means just described for the *Mite* engine is also adaptable for engines having only one exhaust port. Thrust the strip into the port until it is stopped by the opposite wall of the cylinder. The crossection of the strip should be such as to fit the exhaust port rather snugly so as to provide a solid step for the piston. You may find that an angular setting of the prop other than horizontal is required for your particular make of engine.

Fury Screwball

(*Continued from page* 13)

crank is offset to give faster "up" than "down" and elevator area is less. A very *smoo-oo-ooth* handling ship. Just the thing for the expert who has not yet reached the exquisite proficiency of the one guy in every model club who is always referred to as the "maestro."

Clockwise or counter-clockwise circle? The plans show the clockwise arrangement. It really doesn't matter which is used. The first *Screwballs* were flown clockwise; the later models, counter-clockwise. To insure complete safety in all maneuvers it is suggested that a lead weight, of about 3 ounces, be cemented into the wingtip of a counter-clockwise flying ship.

The plans have been drawn on ¼" x ¼" squared paper. As they are one-quarter full size it means the grid should be 1" x 1" on the full size layout. In some instances the squares have been subdivided so that certain contours may be followed more closely. Dimensions are shown only where the grid does not automatically give them. This method of presenting plans makes the preparation of working drawings easy. It is also possible to reduce the size of the finished model by changing the grid. For a Class B model, reduce the squares to ¾" or 13/16"; for a Class A make them, say, ½" or ⅝". The .19 powered *Screwball* pictured was built from these plans with ½" squares on the working layout. Naturally, some modifications had to be made to accommodate the proportionately larger Class A motor and to reduce weight.

The following building procedure is suggested: build the crutch over a full size layout; when dry attach the firewall and motor skids. Pin the crutch to the building board upsidedown. The firewall will be just over the edge of the board so the crutch is in flat contact. Cut the ¼" x ⅛" uprights to approximate length. Then, with the aid of a set-square, cement them to the crutch. Lay in the 3/16" square longerons, trimming the uprights as required for a smooth curve, and adding the 3/16" square crossbraces as this proceeds. At all times check the structure for true alignment. Make full size drawings of the formers. Use the completed fuselage frame and the side elevation on the plans as a check. Leave the formers C, D, E, and F very slightly oversize so they may be trimmed to exact shape for easy sheeting. This is best done by sighting and with a flexible straight length of ⅛" square. When formers B to F are glued to the frame, set aside to dry thoroughly before sheeting the entire fuselage. Make the removable hatch. Add the empennage and landing gear. Carve a cowling to suit the powerplant. Cut away a section of the sheeting between C and D as shown and put in the celluloid. The fuselage is now complete.

The wing panels are best started "in air." That is, the top three spars are marked where each rib is to be placed and assembly begins while holding the structure free of the board. While cementing keep the structure square and free from twist. As soon as this is done, and before the cement has hardened (within, say, half an hour of starting each panel), pin the structure down to the board with the top spars in contact for their whole length. The two rear spars must be jacked up, of course, but keep them parallel to the building surface. Now add bottom spars, leading edge, and tips. When completely dry (takes overnight even with fast setting cement) start sheeting the undersurface. While the undersurface is drying keep the wing well pinned down.

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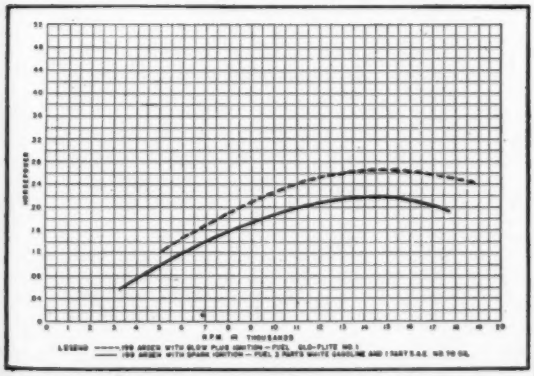

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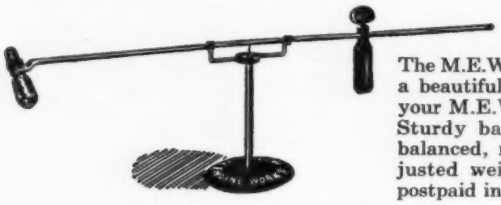

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Remove the semicompleted panels, drill for the control leaders and put them in, add the tubing at the leader outlets, and cut away part of ribs R1 and R2 to accommodate gussets. Cement the gussets securely and finish applying the sheeting.

The completed panels are now assembled to the fuselage. Slots must be cut in the fuselage sides to take the wing spars. The spars are then joined inside the fuselage so that the top surface for the entire span is flat. The bottom surface will have a slight dihedral—just pronounced enough to prevent that illusion of hang-dog, dejected, anhedral which is the objectionable head-on appearance of all wings with a square planform.

It is only necessary to add the control mechanism and a suitable gas tank (and ignition components if wireless ignition is not used) before the ship is ready for finishing. A "quality" finish involves a good amount of careful work. First a coat of shellac followed by a grain filler. Then two or three coats of sealer, sanding between each. Next, two or more coats of colored lacquer and light sandings with "wet-or-dry" between each. Finally, glider polish over the hardened lacquer will give a glowing, super finish.

Note that *lacquer* rather than dope was specified. The tautening characteristics of dope are definitely a drawback when finishing a sheeted structure. Even 3/32" sheet is easily distorted by the extreme shrinkage of dope.

The finished, ready-to-fly *Screwball* should not weigh more than 42 ounces. So if conventional ignition is used, it would be advisable, if not imperative, to attempt a little weight reduction. For instance, wings could be part sheeted and part paper covered; the fuselage might employ stringers in place of sheet, and so on.

As in most things, you only get out of something what you put into it. A carefully made *Screwball* will repay generously in performance and length of service—and, who knows, maybe even a trophy or two.

England Wins the Wakefield

(*Continued from page* 12)

ders is end-plate effect. Ordinarily with unlimited stab area I favor a single rudder. The large rudder on the inside of tail was to let drag help turn the airplane, avoiding large drag of offset rudders. From the stability point of view it worked okay."

Cahill also used a vertical rear rubber peg, mounted off center so that rubber alignment agreed with the right offset thrust. Jim figures he built too heavy however, the ship less motor weighing in at 5.2 oz., and the 24 strand 3/16" rubber motor adding another 5.1 oz. for a total of 10.3 oz. This ship has a single folding wheel, a one blade folding prop with an all-wire hub and a wire protected tip.

Bob Holland, whose cabin job is shown in three view, flew an ordinary looking but truly sharp-performing airplane. Schumacker says he would like to have seen Holland fly with British rubber. Holland favors a wing and tail both set at zero incidence. His rudder has an airfoil section that turns the ship left in the glide. The wing and tail are multi-spar. The entire ship breaks down into small units for easy transportation. For that matter, the majority of ships were simple boxes, the trend being to put the weight in the rubber.

All the boys were impressed with the

difficulty of winning the cup next year, especially in British weather. Our ships, most agreed, are fair weather airplanes. None can match the duration of British airplanes in dead air, and we will have to figure on the probability that the 1949 finals won't have the familiar thermally weather, so suited to our mode of flying.

"I think it should be made clear," states Korda, "that even if it rains, or we have a 60 mph wind, the eliminations will be held on the correct date and R.O.G. without a push. They will have to do this in the finals so there is no use in getting fair-weather fliers on the team. Our ships are sadly lacking in the main respect that they are built for good weather. If we send a team over next year it will be almost a lost cause unless we have fliers who can make a Wakefield takeoff and average four minutes in the *cool evening air.*"

Dick Schumacker makes it sound worse. "For next year the team will have to be picked before the Nationals, preferably three months before, if we are to bring back the cup. A possible eliminations meet planned by sections (West Coast to the Rockies, the Midwest, and the East, each having two members on the team). The main thing I want to put across is that *there can be no delay* in getting our team."

"If we are to bring back the cup," thinks Coryell, "we will have to change our designs to cope with British weather. Right now, not one of our ships can match theirs in dead air." British weather, incidentally, tends to be windy, with the wind dying down toward the end of the day; to avoid the inevitable jam-up they favor the rotation system of flying.

Cahill, on the other hand, won't go further than say that some of the foreign ships can fly longer than most of ours. He points out that our team had the highest score. Reversing the 1939 situation, the British team as a group did very poorly with only two members above 18th. Only one of our men was below 13th.

Designing ships for next year's eliminations along the line of what this topnotch 1948 team thinks necessary is a chore of no mean proportions. A Wakefield job that weighs in at the minimum 10 oz. with adequate rubber is almost unheard of. It is apt to be warp happy, even to the fuselage which takes that big motor. Most builders run 9 and 10 oz. Yet it must do four minutes in dead air, says Korda. But the story probably is more in the rubber than anything else.

Unless we bank on luck, our ships should be dethermalizer-equipped, as witness Cahill in the thick of the woods unable to get in his third flight. Or Korda, who lost firsts and seconds at the Mirror Meet, Plymouth and the Nationals because "I didn't use a dethermalizer—it won't happen next year!" Both Korda and Bunton built quickie "boxes" in order to have ships for Akron.

Next year the trophy will be contested for in Great Britain, a circumstance that gratifies Ireland and the Continent who now have a chance to compete personally —America was too far away. Competition will be even keener then, with many other countries added to the list of entrants. But it won't be a better meet than the one in Akron, where the Cleveland and Akron Women's Chapters of the NAA helped put over a grand contest.

Jim Bunton put his finger on it when he said: "If I ever give up models, I would like to go to a contest like this one so I could quit on a happy note."

The results too were happy, for beyond shadow of a doubt, the best man won.

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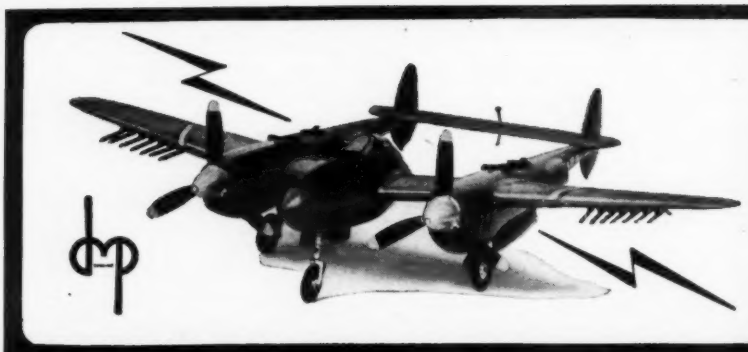

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Design Forum

(*Continued from page* 20)

appears from view in a short period of time. Variation in the circling tendency with various fin sizes is caused: first, by the torque banking the plane to the left; second, by the gyroscopic effect tending to swing the tail of the airplane to the left simultaneously with the bank. With large fin area only a slight angular displacement to the left is required to create enough pressure on the fin to balance the gyroscopic turning tendency. (See Fig. 1A). However, with a very small fin the angular displacement to the left must be made larger in order to produce this same amount of pressure on the fin, B, Fig. 1. Actually what happens is that what the fin lacks in area, it must make up in angle of attack in order to create the necessary pressure. This excessive swing to the left with the small fin (B, Fig. 1) produces the tendency that turns the plane to the right.

Actually with a small fin the plane "crabs" through the air toward the left so that the left wing, when it is dihedralled, has a greater attack angle than the right. This produces extra lift on the left wing which tends to bank and turn the plane to the right. The experiment which shows this characteristic is most easily carried out with a simple rubber powered stick model equipped with a balsa fin. We suggest that you try it sometime. With a little practice you will have sufficient judgment to build planes with the exact fin sizes that provide the degree of turning effect desired. If your plane is designed properly it will not be necessary to incorporate any trick adjustments. Planes give the best flight when wings, fin, stabilizer and thrust line are all set neutral, provided the fin size has been regulated to achieve the desired results.

All this depends on the plane being properly aligned in the first place. Alignment of the plane of course comes under the heading of constructing it accurately so that there is no warping of surfaces and so that both right and left sides of the airplane are symmetrical. The importance of this was vividly illustrated recently in a test with a new high powered model. A friend of the designer had built the wing for this model. The designer had constructed the fuselage and other units. When it was assembled on its first test flight all the angles of incidence, both stabilizer and wing, were checked carefully. The rudder was set neutral and parallel with thrust line. The wing was examined carefully for warping and adjusted so that the attack angle was exactly the same on both right and left wings.

First, glide tests were made. The plane glided evenly and indicated a proper stabilizer adjustment and correct c.g. position relative to wing chord. However, as the plane slowed down while gliding, on a number of occasions the right wing had a slight tendency to drop. At the time this was contributed to turbulent air conditions or faulty launching and was not considered important, so power flights were attempted. The plane had tremendous power for its size and weight and it climbed almost vertically at terrific speed. However, it had hardly left the hand of the launcher before there was an obvious tendency to turn to the right. This resulted in a sharp right bank and turn followed by a dive at high speed into the ground. Fortunately, on the first occasion the plane pulled out sufficiently

before it struck the ground to prevent damage. All adjustments were carefully checked again and the rudder turned to the left to overcome the right turn. Another flight resulted in the same maneuver, but this time with considerable damage as the plane dove in at about 60 mph. Repairs were made and another flight attempted with even more left rudder. A similar crash resulted.

Up to this time the designer had felt that he knew most of the answers, but here was a new wrinkle. Apparently every point of adjustment had been checked. With great disappointment and chagrin, the plane was taken home to the workshop. It then occurred to its designer to check the wing which was constructed by his friend. It looked all right, but nevertheless measurements of camber and dihedral angle were carefully made. The wing had a polihedral angle, one angle at the center with the tips of each wing turned up at a still greater dihedral as shown in Fig. 2. After measuring the dihedral, light began to dawn, for one wingtip was turned up 25% more than the other. The left tip had a dihedral angle compared to the inner part of the left wing of 2"; the right tip dihedral measured 2-5/8". Even after discovering this, it was difficult to believe that this variation in angle had caused the erratic flights. However, on checking back with previous experiments it became clear that this actually was the cause of the trouble, especially when recalling that the right wing dropped at slow speed during the gliding tests.

Apparently what happened was that the air spilled from the sharply turned up right tip more than from the left, causing a sharp reduction in lift on the right side and a slight increase in drag. Because of this the right wing drooped and was pulled around sharply, resulting in a sharp right turn and dive under power. This variation was exaggerated because of the plane's high speed. In a slower craft this may have had no obvious effect. Perhaps some of you may have had a similar experience. In any event, it illustrates that great care must be taken in aligning your models. This may be the answer to the problem presented by Roger Warren of Great Neck, N.Y., who writes:

"I built a plane like the design enclosed (shown in Fig. 3). It had a solid balsa fuselage and solid 1/8 rudder and elevator. She balanced perfectly with an *Arden .099* for power. I was tremendously pleased by the tight right spiral climb. She really moved upstairs. She pulled out of the upward climb like a picture without losing any altitude at all. Then she started a beautiful long, flat glide. That first day with no adjustments at all I got four flights. The last one was the best. There was no wind. On an approximately 20 second motor run she stayed in the air almost 4-1/2 minutes. She landed in a tree and, in trying to get it out, landed engine first without damage in a mud puddle. So I quit for the day to clean out my engine.

"The next day I decided to try again. On this day there were thermals all over but with a 30 inch plane I didn't think once that I might lose it. The second flight she flew away, never to be seen again. So I got six flights out of it, all of them highly successful and the only adjustment was a little left rudder on the last two flights for a tighter glide.

"The very next day I bought another *Arden .099* and built another ship exactly like the first. I swore no matter how

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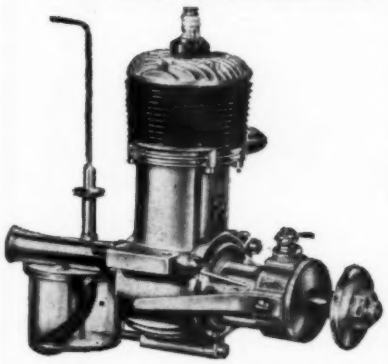

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small the ship I built from then on it would contain a dethermalizer. When everything was ready to go I discovered that my luck no longer prevailed. She did nice test glides but under power she did a tremendous right parabola and busted the boom. I was then talked into building a bigger plane for this motor. She really wound up. Then I built the larger version of the design. Since it has been finished I have had some of the weirdest flights and the worst crackups ever witnessed. She has a nice glide and balances well. I tried many degrees of left thrust to prevent the right spiral dive. The last time I got too much left thrust and she busted the boom again. It had already been spliced twice. My motor has really taken an awful beating. I don't know how much longer it will last."

It is difficult to diagnose the trouble without examining Mr. Warren's airplane. However, it appears from the side view (Fig. 3) that the fin is very small. It is quite possible, due to the small fin area combined with the very large forward side area, that the plane has a tendency to turn sharply to the right against torque. When the side area is high above the c.g. as in this case and a sharp turn is executed, a decided right spiraling tendency results. This turn may not be initiated by the lack of fin area but any unstable tendency caused by some irregularity in design or adjustment might induce the right turn which the small fin cannot correct or to which it might even contribute. We suggest a check of the tip dihedral. This caused the trouble in the plane mentioned above and it might also be the cause of Mr. Warren's trouble; whereas his first plane was properly aligned and flew well, the second planes possibly were erratic because of improper alignment.

Another possible trouble might result from the small angle of incidence. Usually it is necessary to use 2° or 3° incidence in the wing. When no incidence is used, as in this case, the plane is more apt to exhibit spiraling tendencies. The greater the incidence the less the spiraling effect under power, because any skidding outward on the turns cause less proportional difference in angle of attack on the right and left wings when the angle of incidence is large.

Fig. 4 illustrates the effect of the difference in incidence angle. "A" illustrates the wing set at a small angle with its center chord nearly on a line with the line of sight. In both A and B the line of sight is at equal angles with the longitudinal axis L of the airplane. As you sight along the wing on the left, A, the leading and trailing edges are directly in line with your vison and no part of the wing undersurface is visible. However, a large part of the undersurface on the right is visible. This indicates that the left wing is at zero degrees with your line of sight, while the right wing is at several degrees positive. If the air approaches this wing along your line of sight, it is obvious that the right wing will lift much more than the left because of its greater angle.

Now look at wing B. Here you seee the undersurface of the left wing slightly because the wing is set at a greater attack angle. You can also see a greater part of the right wing. However, it is obvious that the increase in visible area of the undersurface on the left is a larger percentage of area visible at the right, than it is in the case of wing A. If we express it in fractions, wing A will be zero divided by 2. Wing B will be one divided

by 3. The significant point is that the difference in lift between right and left is proportional to the visible area on the right and left and to the numerical fractions given above. This indicates that in wing B, the increase in lift on the right wing is less in proportion to the lift on the left than it is in the case of A. It is this difference in lift on the two wings that creates banking and spiraling during turns. If both wings lift equally—ignoring the effect of side pressure on the rest of the airplane—the plane will turn without banking. The more the difference in lift between the two wings, the greater will be the bank. Perhaps this discussion may help Mr. Warren to solve his problem.

Convair XB-46

(*Continued from page* 19)

as the catalyst for the entire program, the suggestion that provided not only the means for these accomplishments but the speed so vital was made by the NACA representative present.

In its 30 year history the NACA had provided invaluable research data to the industry. But these data were usually provided an individual manufacturer on the basis of a wind tumel analysis of a model he submitted of a new design. Had this method been used in the new program, the NACA would have been called upon to provide valuable research time to perhaps dozens of separate models of each of the five manufacturers involved —a time taking and costly procedure. Instead, the NACA representative said: "Why not let us develop the wing profile and the engine nacelle lines to be standard for the entire program, thereby letting us do one job quickly rather than dozens of jobs far more slowly?" The logic of the idea was immediately apparent to all and thus was born the NACA-Air Force-Industry "High Speed Bomber Project", one of the most exciting chapters in modern aviation history.

It was not enough that the new bomber be fast. It had to incorporate the very latest advancements in all the aviation fields. Such items as pressure cabin, thermal de-icing, radar equipment and countless other such complex developments were ordered integrated into the design. And the Convair engineering staff even included a brand new advancement of their own: a pneumatic system instead of the universally used hydraulic system for operating the landing gear, brakes and bomb bay doors.

Never before was so much effort put into a single project as the new high speed bomber. In only a year the entire job of research, design, fabrication and assembly had been completed and the new Convair XB-46 was rolled out onto the apron at Lindbergh Field in January 1947.

The XB-46 is a large airplane, with 113 ft. wingspan and a length of 105 ft. 9-1/2 in. It stands 28 ft. high, weighs about 48,000 lbs. empty and 91,000 lbs. fully loaded; it is powered by four General Electric J-35 (TG-180) axial-flow turbojet engines developing 4000 lbs. static thrust each, or the equivalent of 16,000 hp at its cruising speed. At top speed this thrust is equivalent of about 21,000 hp!

It would be difficult to imagine a "cleaner" airplane. Its lines breathe speed. NACA research data was used throughout its design. One of these findings was the importance of high "fineness ratio" (length divided by width), and the XB-46 fuselage, with its long pencil-slim-

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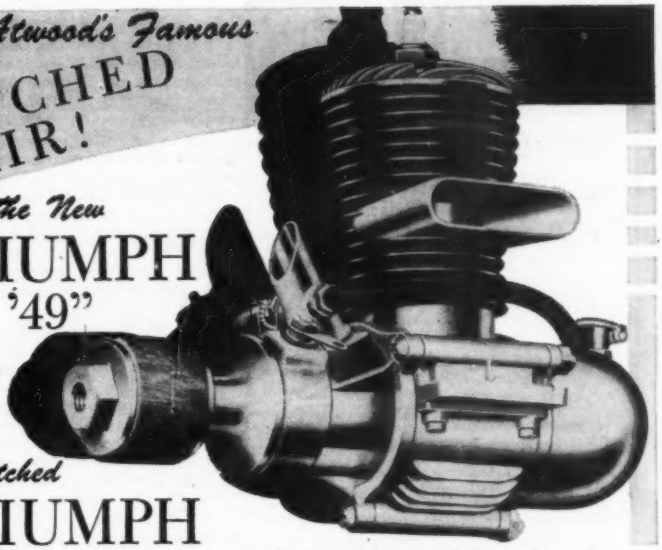

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lines, has the highest fineness ratio of any aircraft ever built. Its thin wings are also designs developed by the NACA Ames Laboratory project and are of a laminar-flow, low-drag section developed especially for the purpose.

The nose of the airplane houses the bombardier's compartment, but even the wartime super-secret Norden bombsight is now passé for the bombs of the XB-46 are dropped by special radar equipment. The flight crew, made up of pilot and co-pilot, are located in a fighter-type bubble canopy which is ejected in emergency. The two pilots are seated in tandem to preserve the slim lines of the fuselage, an innovation in bomber design.

Immediately behind the flight crew is the world's largest self-sealing fuel tank, and aft of this is the spacious bomb bay which accommodates a variety of heavy bombs, twenty 500 lb. bombs or one monster 22,000 pounder! Note that no small bombs are carried, for with jet fighters the 100 and 250 lb. bombs are out of the picture. The high speed of the new craft and their high altitude cruising levels make it necessary to deliver their punch in a concentrated package of devastation. The aft fuselage tapers gracefully into the rear gun turret which, believe it or not, is the only armament aboard the airplane. While the layman might guess that a multi-jet bomber would carry even heavier armament than the wartime *Superfortress*, actually the reverse is true. Due to their great speed, AF tacticians do not believe enemy fighters will be able to do more than chase them, and the new bombers carry only two .50 cal. machine guns in the tail as a warning to enemy fighters to beware. The turret is radar operated and virtually automatic in control.

The unique feature of the XB-46 that required extensive research is the dual jet engine nacelles, which are models of simplicity and ærodynamic fineness. Actually it is difficult to believe that these slim, streamlined nacelles mount two 4000 hp engines but the dual exhaust nozzles are the giveaway. The heavy main wheel retracts forward and lies snugly between the two engines sealed over by clam-shell doors. The nosewheel folds up rearward into a compartment below the copilot.

It is interesting to note the almost complete absence of fairing on the XB-46, the heavy curves that characterized monoplanes of the 'thirties. NACA research revealed that when two surfaces meet each other at exactly right angle fairing panels are superfluous and actually add drag rather than reduce it!

But the most interesting technical innovation of the XB-46 is its pneumatic operating system, which controls the landing gear retraction, wheel brakes and bomb bay doors. The system is claimed to be lighter, requires less engine power, is free from fire hazard, operates in extremes of temperature, and when a leak occurs there is no mess! A major advantage of the system, however, is its fast-acting characteristics. For example, the landing gear retracts into the nacelle in less than four seconds; and if you've watched an airliner getting its wheels up by conventional hydraulic pressure following a takeoff you know just how much quicker the new system is! The bomb bay doors open or close in just one second; in other words, as quick as you can say: "bomb bay door" they have completed an operation!

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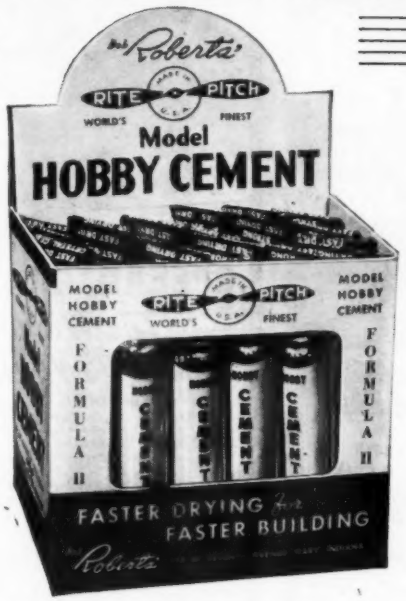

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As superb an airplane as the XB-46 is, it has been passed over by the AF procurement selection board. AF has been well pleased with the airplane, particularly its delivery flight during the course of which it sped from Oklahoma City to Wright Field at a speed of 533 mph. But AF decided that its sleek lines would cost too much to build, its size gave it too much weight, thereby adversely affecting its performance, its maintenance would prove difficult and it barely missed its performance targets. The XB-46 has a top speed just a shade under 500 mph and a range another shade under 3000 miles. Because of these slight deficiencies, the second airplane was not built and no further procurement is planned for the type since another similar airplane has been ordered in a rather considerable quantity.

But the Convair XB-46 has taught the AF many lessons and it has not yet even been thoroughly exploited. Its pneumatic system has already found eager interest, and at least one other aircraft, the Convair XP5Y-1 flyingboat now nearing completion, will employ such a system. The lines of the airplane have permitted full scale performance tests of much wind-tunnel data. The slim, dual nacelles have proved important sources of jet engine installation test data. Much has and will be learned from the Convair XB-46, bomber of the jet age.

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Air Ways

(*Continued from page 29*)

motor trouble get in touch with the Anaconda boys who will be glad to pass along data on their motors, fuels, props, etc.

* *

Picture No. 1, submitted by Julio G. Dumo (FEATI Institute of Technology, Santa Cruz, Manila, P.I.) shows *Barnstormer*, a Class D stick rubber powered model whose wingspan is 55" with a polyhedral of 7" at the bamboo wingtips. For great strength, ruggedness and durability, the fuselage was covered cross-grained with Silkspan and doped with red dope—thus tremendous power could be packed in. It is a "super thermalier" having given a long series of excellent performances, and has a slow-turning 18" diameter single bladed folding prop.

Paul Van Sant (6330 Stony Island, Chicago 37, Ill.) is proud of his *Nieuport*, shown in No. 2. He logged over 600 flights without breaking a prop; however, when he finally did break one, he washed out the plane. Wings were covered with silk finished in blue, and the fuselage was an odd salmon color.

No. 3 shows Floyd Lahue's (Box 92, Highgate Center, Vt.) *Fokker D8*, built from old M.A.N. plans. It has a span of 38" with 10.5 oz. wing loading and is powered with an *Atom* motor. Fuselage is Fokker red, wing and tail are cream, and the insignia is black with a silver outline. It also has a removable wing and tail assembly. Although this model hadn't been power-flown when the picture was taken, hand glides indicated that it was a bit fast in normal flight.

No. 4, by Howard W. Smeltzer (243 S. Washington Av., Greensburg, Pa.) caused quite a discussion when Mr. Smeltzer displayed the *Curtiss XP-55* in his hobby store window. Passers-by wanted to know "which direction" it was going. The model is solid balsa construction, using talcum powder mixed with clear dope for fillets. Plans for this model were also obtained from M.A.N.

Robert F. Pauley (15 Cherry St., So. Plainfield, N. J.) forwarded No. 5. This original has a span of 19" and is 23" long.

Named after a little dog mascot of a Naval unit, *Missfire*, No. 6, was built by D. T. Hoyle (1105 Sutter St., San Diego 3, Calif.). Span is 72", length 50", and total weight 3 lbs. 5 oz. This very successful model was designed around C. H. Grant's theories of aerodynamics.

AC1 J. D. McHard (3501130, Photographic Section, R. A. F. Sembawang, Singapore, Malaya) sent in No. 7. This *Seahawk* was built from enlarged M.A.N. plans. Average performance is 45 secs. on half turns. The model is Jap tissue covered with silver fuselage and yellow upper wing, and the motor is completely built-up.

No. 8, submitted by David Friend (Box 291, Atascadero, Calif.), had not been flown when the picture was taken. It measures 8" from fuselage centerline to wingtip and is 13-1/2" long. It is all balsa construction and is finished in enamel with automotive primer as an undercoating. The motor is, of course, run on a glow plug. The two small tubes seen on top of the model are the fuel vent and filler tubes.

Kaj Frohind (Ahlgade 21, Holbak, Denmark) sent in No. 9 of his very nice diesel powered model. Too bad he didn't tell us anything about this ship.

Eddie Seward (10 Troop Lane, Providence 4, R. I.) sent No. 10 of his first controline gas model. Because it is under-

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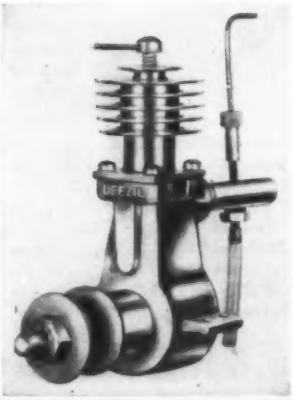

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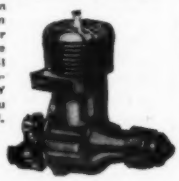

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powered, flights haven't been too good. The model is entirely built-up and is covered with bamboo paper.

No. 11 from Luther Bullock (no address given) shows his *Night Hawk*, drawn from M.A.N. plans.

No. 12, built by Raymond Malmstrom (The Village College, Impington, Cambs, England), was inspired by the 2-3 seater full scale type of light aircraft; it is an attempt on his part to try out in model form a type of light airplane combining the safety of twin motors with the best possible all around visibility. Complete with a carved balsa pilot in the cockpit, the model weighs 1-1/4 oz. and boasts a span of 20".

NEWS OF MODELERS

In this column we publish the names and addresses of readers (most of them from overseas) who write us that they are anxious to contact American modelers—some seek a pen-pal; others wish to exchange a foreign jet or diesel for an American engine; some would like to exchange magazines, plans, etc. You will find it very interesting to select one or two names and start a correspondence with these fellow modelers.

PEN-PAL SEEKERS: John O'Flaherty, 18 Crampton Court, Dame St., Dublin, Ireland . . . Cattani Paolo, Via Fossolo, 36 Bologna, Italy . . . Frank D. Rogers, 8 Farmer St., East Brighton S 6, Melbourne, Australia . . . James T. Walker (Sec. of *Darlington M. A. C.*), 86 Cleveland Av., Darlington, Co. Durham, England . . . L. Dunn, "Westview", Quarry Gardens, Blaydon Burn, Blaydon-on-Tyre, Co. Durham, England . . . P. D. Banfield (19), 25 Riverview Rd., No. Balwyn E. 9, Melbourne, Australia . . . John R. Tomlinson (16), 145 Cranbrook Av., Cottingham Rd., Hull, East Yorks, England . . .

E. C. Stimpson, R. R. #1, Lawrence, Kans. . . . Owell C. J. Peterson (29) Box 18-B, Luxemburg, Wisc. . . . S. C. Dyne *(Battersea & District Aero-Modellers)*, 35 Grand Dr., Raynes Park, London S. W. 20, England . . . P. Berthelsen (22), 11 Regent St., Coventry, Warwickshire, England, favors U-control . . . Graham B. Marshall, 21 Upper Bridge St., Sterling, Scotland . . . Victor Wilton (16), 34 Garden Av., Mitcham, Surrey, England, another controline fiend . . . Len Harding, 58 Ward End Rd., Ward End, Birmingham, England . . . Bernard Breen (18), 7 Goodneck Av., Kingsford, Sydney, Australia . . . Dale R. Barcus (Box 377, Genoa, Ill.) is interested in contacting model clubs in Mexico, Chile, Union of So. Afr. and Australia . . . Ernest V. Piercy (17-18), 18 Winsford Rd., Fallowfield, Manchester 14, England, especially interested in U-control . . . Patrick Scully (16), 11 Holywood Dr., Carnegie S. E. 9, Melbourne, Victoria, Australia, interested only in U-control and FF rubber gliders.

EXCHANGE MOTORS:—A Proctor (21 Lennox St., Worsthorne, Burnley, Lancs, England) . . . G. Barker, Hon. Sec. of *Gravesend Aeromodelling Club*, 3A Cobham St., Gravesend, Kent, England.

EXCHANGE MAGAZINES, PLANS, ETC.:—W. Powell (16), 56 Rook Hill Rd., Chequerfield Estate, Pontefract, Yorks, England . . . N. Higgins, 59 Bramble Rd., Hatfield, Herts, England . . . D. Cooke-Sanderson, 24 Elleston Ave., Great Barr, Birmingham 22A, England . . . L. J. Rowell (member of *Briseton Balsa Butchers*), 200 Briseton Rd., London S. W. 9, England . . . H. Chester (40), 63 Queen's Dr., Finsburg Park, London N. 4, England . . . James Young, 69 Fellows Rd., Cowes, England.

SPECIAL REQUESTS: Walter Fitch,

who used to do a great deal of model work in upper New York State, writes that he is now located with the Engineering Division of Boeing Airplane Co. at Wichita. He finds that thermals are continuous out there and feels it is an ideal location to conduct experiments on gliders. He would like to hear from some of his old model building associates. You can reach him at 4920 E. Lewis St., Wichita, Kans.

CLUB NEWS

California

We learn from the *Fresno Gas Model Airplane Club's* periodical "Fresno Model News" the results of the Sacramento *Skyoneers'* Free Flight Meet held August 1: *Class A*—R. S. Bray 12:42.1; *Class B*—Bob Risvold 9:10.5; *Class C*—Don Foote 12:12; and *Jrs.*—Fred Landman 6:33.

The *Skyoneers* are now strictly a Free Flight Club; meetings are held the last Wednesday of each month at the Clunie Club House. A free flight contest for the club is held the first Sunday of each month. Weenie roasts are given quite often for club members and their families, and the boys say it's fun.

J. C. Wilson reports that the *Flying Maniacs* of Santa Barbara are on their way. In one week they increased their membership from 7 to 14! Teaching the youngsters to make and fly model planes is their aim.

After checking the scores of the Plymouth International Meet, it was found that Frank Cummings of the *L. A. Thermal Thumbers* had 26 points to Bob Holland's 20. Thus, Frank became Plymouth International Champion instead of Bob as had been previously announced.

Connecticut

Prompted by the account of the combined model airplane meet and ball game mentioned in "Airways," Oct. '48 issue, William Treadway, Sec. of *The Bell City Aeromodelers,* (Bristol) tells us his club held a similar affair. Over 2500 spectators attended and the results were very successful. This club, which was organized in April '47 and is AMA chartered, now has 40 members. Free flight was very popular this summer, and especially CO2. *Mufflers on U-control ships are required with no exceptions.* Meetings are held every Tuesday evening at the Salvation Army Hall.

Florida

Not enough AMA Leader Members seem to take their job seriously. However, there is one Leader Member—Don Warner of Box 1581, Lakeland, Fla.—who has gone all out in his efforts to unite model groups in a statewide setup, but he has thus far received very little cooperation, especially from Leader Members. In an appeal addressed "To Modelers and A.M.A.", Don points out the success of such groups in California, Ohio and the Mid-Western area:

"My plans for Florida were patterned after the county-wide group in Pennsylvania. This group, under the active leadership of my friend William A. Lehman, has progressed until there are six clubs united in one county. One Club alone has its own school bus in which the members travel to and from contests each week. This same Club now boasts a completely equipped workshop and a regular place to meet for business meetings and flight meets.

"A.M.A. might be able to support the regional groups to a better degree if Leader Members in each state would band together —pass word on to state groups, who in turn would pass on important matters to District officials, who would finally send in the vital matters to national headquarters in Washington.

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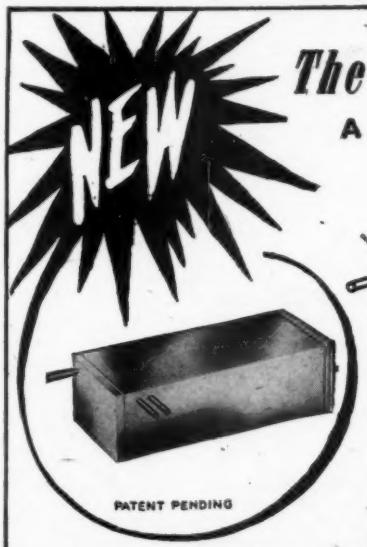

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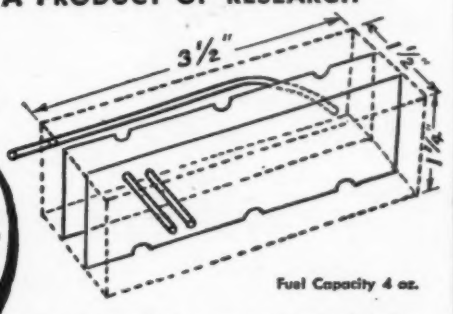

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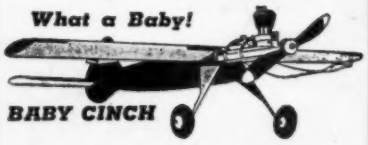

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"The important matter at present is: *co-operation* on the part of all concerned. Here in Florida I have been working since February on the state group. I am no nearer my goal now than in February . . . I have gone to great expense to telephone and receive promises of help and then get no word from them. Is this what is called 'leading'—if so I want none of it. . . . So far as I can tell to the present time, only two of us have tried to promote the hobby in the whole state. Where are the others, and why have they not been courteous enough to get in touch with us? This hobby needs more men like Bill Lehman, E. N. Angus, Russ Nichols, Al Hummell, Vernon Oldershaw, M. C. Faulk and others! Let's see where they are! Those who can't work for the benefit of all should not accept flattering titles and then not work. Let's work!"

Illinois

With the assistance of the *Aurora Aeronuts Model Plane Club*, the *Aurora Exchange Club* held its 2d annual contest at Phillips Park field Sept. 19. Results: *Jr. Speed Class A*—Bob Fraza 85; *Class B*—Dave Gregory 110; *Class C*—Dick Welch 101.8; *Class D*—Dick Welch 132. *Stunt*—Armon Baney 630 pts. *Open Speed, Class A*—Bob Antrim 90; *Class B*—Ken Waters 121; *Class C*—Tony Grish 121; *Class D*—Ralph Lake 127.4. *Stunt*—Ray Wirges 292 pts.

Here are results of the Air Force Day Meet sponsored by Chanute Air Force Base and directed by Lt. Harry G. Vogler, Jr. *Speed Class A*—E. K. Waters 83; *Class B*—Tony Grish 128; *Class C*—Tony Grish 128; *Class D*—Robert Bascomb 144. *Stunt*—Donald Hotz. *Flying Scale*—Dwight Hartman.

Maine

Stanley Davis, Editor of the *Flying Maniac's* paper the "Tale Spinner", reports that the club has taken more firsts and seconds than any other in the State! Radio stations are now backing them to the limit. WFAU gave them publicity on their group flying meet last spring; WRDO is going to give *free* advertising. Results of the *Portland Propsnappers* Annual Meet: *Speed Class A*—Larry Johnson 40.5 mph; *Class B Jr.*—Matt Marquardt 60 mph; *Class B Sr.*—Bill Ellison 94.75 mph; *Class C*—Matt Marquardt 81 mph; *Class C Sr.*—Smitty 96 mph; *Class D Sr.*—Howard Lambert 121 mph; *Class D Jr.*—Matt Marquardt 64 mph. *Stunt Open*—Bill Ellison. *Scale Open*—Pete Paterson.

Maryland

Results of the *Aero Craftsman Club* of Baltimore annual contest held October 3: *FF Class A*—J. Ripkin; *Class B*—J. Ripkin; *Class D*—R. King. CO2 (tie)—J. Cochrane and F. Verrier. U-control Stunt—J. Heise. High Time of Day—J. Ripkin. Shortest Flight—B. Packham. Worst Crack-Up—P. A. Freeman.

Michigan

Since 90% of the *Inter-City Model Club's* members were in the Armed Forces, the Club disbanded in July, 1942. On September 22, 1948, the Club was reorganized and the AMA notified them their 1940 charter is still in effect. 25 members attended the meeting, and all former officers still in this vicinity were re-elected by unanimous ballot. The Club's Board of Directors is composed of men who have been flying model airplanes for 15 to 30 years and who hold all the local free flight endurance records, both indoor and outdoor. The Club will welcome new members; if interested write to Secy. Robert W. Fraser-Lee, 832 Pine St., Port Huron.

New York

Results of the *Ithaca Balsa Birds* Contest Sept. 12 at Ithaca Municipal Airport: *Class A FF*—John Kavulick 4.5; *Class B FF*—Shao Chi Lin 1:00.3; *Classes C & D FF*—Cleon Newman 1:43.4. *Speed Class A*—Henry Nixon 83.5; *Class B*—Henry Nixon 95; *Class C*—Henry Nixon 83.5; *Class D*—Wallace Spry 124. *Stunt*—Marvin Jennings 130 pts. *Novelty*—Edward Dubois & J. Casterline. *H-L Glider*—Samuel Winterstein. *T-L Glider*—Osborne. *Rubber-Powered Cabin*—Weston Jenkins. *Stick*—Osborne. *High Point Winner*—Lawrence Corser.

Oregon

Eugene Prop Spinners held a "fun contest" featuring prizes and trophies. It was divided into two classes—*Amateurs*, those who had never placed in a contest; and *Old Men*, all fellows over 40. The Pro class had trophies to work for but seemed to be having more fun judging the newcomers. Results: *Old Men*—Ed "Pappy" Gardner. *Amateur Open*—Dar Hancock; *Amateur Jr.*—Earl Woolbrandt. *Open Pro*—Maury Morton; *Jr. & Sr. Pro*—Keith Gardner.

Pennsylvania

According to their Club bulletin, the *Prop Spinners* of Doylestown have been quite successful during the recent contest season with their new pro class rule: "All members of the model industry, manufacturers, distributors and dealers will fly in a class of their own for a prize not to exceed one dollar."

Scrap Box

(*Continued from page 4*)

In a way we are our own worst enemies. In the annual messing with the rules the few have their say at the expense of the many. By few we mean the contest boys, as opposed to the many who don't go to contests but are obliged to use commercial designs based on contest trends. Rules based on convenience—such as no landing gears or the elimination of crossection and wing loadings, themselves made necessary by a shortage of timers, (or processing headaches growing out of the large numbers of ships entered in a meet)—have resulted in airplanes of super-performance, bad looks, and general difficulty in flying. No manufacturer in his right mind would offer to the public the kind of free flight model that cannot be flown within 50 miles of a major city. We contest modelers are not in the least romantic about airplanes; we would gladly leave off the wings, like we did landing gear, if the ornery things would only fly without them!

The smaller, lower powered, better looking airplane is dead in America. The present free flight is a fearsome thing which can be flown by a small minority through great skill and a self defense system of adjustments, the whole at the mercy of the tiniest, undetectable warp. Regardless of viewpoint, it would be infinitely better if we had less events with a higher level of design. If you don't think freeflight is in a rut, just take a look! You know durn well what we must do to handle that power!

* *

On the way home from the Nationals, the Little Rock and Dallas boys had a real bull session. Thanks largely to Eddie Joe from Little Rock, and Stanglin from Dallas, a west coast landslide was prevented in control line at both the Nationals and Plymouth. The boys took six firsts, two seconds, and assorted other places. Stanglin, a senior, just steps over to his lathe any time he needs an engine part. The Dallas boys have developed a special carburetor that is described as a lulu by our spies. No needle through the venturi; the fuel sprays in through a series of holes in the throat.

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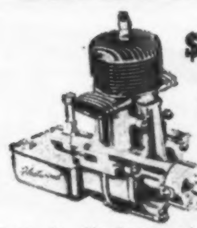

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Packet #12PP - Fighters:-Bell Kingcobra P-63 37½ ABsmC; Messerschmitt 109 32 ABsmC; P-38 Lightning 52 BC; Hawker Tempest 34½ ABsmC; Douglas Dauntless SBD 40 ABsmC.

Packet #13PP - World War I - all AB: Nieuport 17C.1 26½; Spad 13C.1 26; Fokker D8 20½; Fokker D7 22½; Sopwith Camel 27½.

Packet #14PP - Lightplanes - all AB: Piper Skycycle 30; Jameson Rocket 31; Globe Swift 29; Ercoupe 30; Culver V 28.

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Sam Beasley (Dallas) got 142 mph with his 49, which is as good as you can get anywhere; and old man Sadler hit 141.7 mph with his 60 job. Considering that Sadler used such stock items as a model 20 McCoy, a 9-12 Excell prop, .012 gauge lines, Tiger B fuel, and a standard airplane, there must be some hope for the rest of us. Corley walked off with stunt and combat, the latter a popular highlight of southwestern meets.

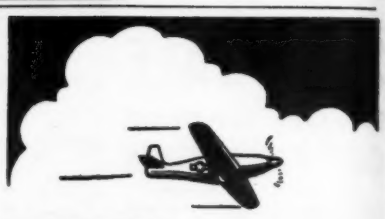
Corley and Dean Wright paired off in the final round. When they started, all other flying stopped. They would pass each other in opposite directions, one upright and the other inverted. After a few minutes of this the boys got pretty whipped from trying to keep the lines untangled.

* * *

"Well, oldtimer, I too recall the days you refer to in the *Scrap Box*," begins a long letter on AF stationery from Chanute Field, Rantoul, Ill. Wondering who was getting so familiar we flipped through three finely typed pages and there, lo and behold, was the name of an oldtime leader and contest director from Pittsburgh—Harry Vogler. That was before the brave new world we had to fight for. Harry went in as an enlisted man at Middletown Air Depot, Pa.; an officer at Ogden Air Depot, Hill Field, Utah; then with 322 Troop Carrier Wing, through the south Pacific and the Philippines, back to the States at Amarillo Air Force Base; and at the time of this letter, in Mobile Training Units, at Rantoul.

"I for one," Vogler writes, "cannot understand the stagnation of the free flight builder who gave so much to the model game. Prior to Pearl Harbor, in 1941, the real model designer thought out and made his own wing ribs, spars and various other parts and, in so doing, became a technician of great value in the emergency. Where has that spirit gone?

"In my opinion," Vogler revs up, "this tendency started when the AMA relaxed the strict rise-off-ground ruling to permit hand launching of r.o.g. aircraft. The main principle in building and flying a model was the ability to wind up the craft, set it down on any surface and watch the thing move from a dead stop to sufficient speed to take off and fly unler its own power. I was one of the charter members of the original International Gas Model Association, founded by Charley Grant in 1935. My opinions are based on the fact that, as contest director of many large meets in western Pennsylvania, Eastern Ohio and West Virginia, I was able to observe the builders from an unbiased viewpoint. Being cognizant of the stages of change that a builder has gone through, I feel that free flight was the ideal to be desired, and which gave so much to the aviation industry of the nation."



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Glad you spoke your mind, Harry, and welcome back. You don't know it, maybe, but there has been a lot of feudin in model circles while you were gone. You'll find a lot of fellows on your side, but don't be surprised on the other hand if a few well whipped hatchets come at you!

* *

Thanks to Bernard Olney, we now know why all England keeps sending us those tall-but-true stories. Some of the boys have even sent in tall-but-true articles. What gives?

"I am writing this letter in the hope that one of my tall but true stories will qualify for a year's subscription to MODEL AIRPLANE NEWS," says Olney. "The reason is that the Board of Trade will not allow us to renew our subscriptions for American magazines. Something to do with money, I think!" Shall we give Olney a shot at the subscription award? Okay Bernard, give!

"A few Sundays ago," begins Olney. "I entered the Daily Dispatch Model Aero Rally at Woodford Aerodrome. I was flying my Whizzer 3, a 60" span tailless glider which I designed, when a lady in the crowd remarked as it flew overhead, 'Look, there is a part of a model flying.'

" 'Don't be silly,' said her little boy, 'that's a wingless.' This fellow Olney uses the same technique as Senator Ford on the 'Can You Top This'? program. He pops another story at you quick-like just to make sure.

" 'Another laugh occurred in control line,' says he, on his second official in the story telling event, 'when a little boy, after seeing half a dozen crashes, as a result of slack lines, motors cutting out when inverted, and so on, said to his father, "I bet he wins, he's had three crashes already"!'"

For the good try, Bernard, your two-flight average should be good enough to get you this month's award of a free subscription to M.A.N. for the best tall but true story.

Flash

(*Continued from page* 1)

plowed a furrow across the ground, and it came to a halt right side up and its pilot very much alive—but badly shaken!

NEWS FROM NORTHROP! This time it's the much vaunted XF-89 all-weather fighter designed and built in great secrecy at the company's Hawthorne, Calif. plant. The craft features a side-by-side belly mounting of its twin GE-Allison J-35 turbojet engines. The engines are mounted on either side of the fuselage belly in bulbous fairing assemblies and feature straight-through airflow with the jets exiting aft of the fuselage "pod". The tail is conventional cruciform layout with the horizontal stabilizer mounted high up on the fin out of harm's way to permit the hot jets to pass below. Pilot and copilot are mounted in tandem to enable the latter to operate simultaneously as radar observer for night-fighting duties. The cabin is covered by a bubble canopy that flies clear as the ejection seats fire the crew into the air in emergency. The gloss-black craft has made its first test flights successfully at Muroc and the Air Force has already made extensive plans for the craft.

MORE NEWS from Northrop, this time the X-4 research airplane. But this is not another highly touted supersonic speedster designed to outdo the Bell X-1; rather it is a special research tool. Engineers and scientists have long known of the difficulties to be expected when an airplane flies into the speed of sound (760 mph at sea level, 660 mph at 35,000 ft. under standard conditions) and the Bell X-1, X-2 and the Navy Douglas D-558-I and -II have been designed to explore the aerodynamic mysteries lying on the other side of the sonic barrier. But Northrop was assigned the difficult task of producing an airplane to fly continuously in that narrow band at sonic speed and slightly below and above it. It would take pages to describe the difficulties of flight at these speeds but suffice it to say that the Northrop X-4 will probably take more

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Spark plugs, state size	50c		
Austin Timer	1.50	Veco Air Wheels, per pair 2½" 2.15, 3½" 2.50 4¼"	2.75
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1/16x1/4	2c	1/4x3/4	8c	1/16x2	8c
1/16x3/8	2½c	5/16 sq.	5c	3/32x2	10c
1/16x1/2	3c	3/8 sq.	6c	1/8x2	10c
3/32 sq. 3 for	4c	3/8x1/2	8c	5/32x2	12c
3/32x3/16	2c	1/2 sq.	9c	3/16x2	14c
3/32x1/4	2½c	3/4 sq.	15c	1/4x2	16c
3/32x3/8	3c			5/16x2	18c
3/32x1/2	3½c	PLANKS		3/8x2	20c
1/8 sq. 3 for	5c	1x3	.50	1/2x2	22c
1/8x1/4	2½c	1x6	.90	1/32x3	10c
1/8x3/8	3½c	2x2	.60	1/16x3	12c
1/8x1/2	4c	2x4	1.20	3/32x3	15c
5/32 sq.	1½c	2x6	1.80	1/8x3	19c
3/16 sq.	2c	3x3	1.80	3/16x3	22c
3/16x1/4	3c	3x6	2.70	1/4x3	25c
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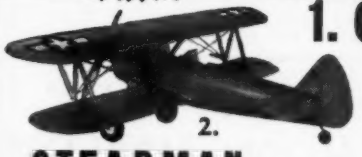

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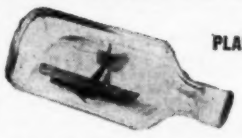

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punishment during its lifetime than any other airplane ever built. It is a tiny airplane with only 25 ft. span and a length of just 15 ft.! (About the size of a Goodyear racer!) It weighs only 7000 lbs. With its twin Westinghouse 19XB turbojet engines installed in the wing roots, its swept-back wing and its swept vertical tail (it has no horizontal tail but only Northrop-developed "elevons" on its wing) it is expected to take off, fly in the sonic band of speeds and land under its own continuous power. Like its sister research airplanes, the X-4 is loaded with hundreds of pounds of special NACA research instruments which automatically record and transmit to the ground the technical data gathered while it is in the transonic speed zone.

AND MORE NEWS from McDonnell, on the swept-wing XF-88 which is believed by many to be the fastest fighter in the world (yes, faster even than the XF-86 record holder!). The XF-88 is a smooth sleek craft designed as a "penetration" fighter. It is powered by two Westinghouse J-34 axial-flow turbojet engines mounted side-by-side in the belly with the air intakes located in the wing roots, similar to the McDonnell FD and F2D Navy fighters. However, the requirements for wing thinness made it impractical to mount the engines as in these Navy designs and the 3000 lb. thrust units are located in the fuselage. The XF-88 has a span of 40 ft. and is 55 ft. long, the combination of length-longer-than-span now so popular in highspeed aircraft. This is indicative of the tremendous progress made in airfoil research during the war which has produced wings with such great lifting power per unit of area as to require considerably less area than prewar designs. The new craft is no lightweight, weighing about 15,000 lb. Its top speed is right at the sonic mark and some are certain it can slip over if pushed. It is now at Muroc Air Force Base undergoing extensive testing.

THE F-86 FIGHTER finally claimed the world's speed record officially and now what everybody has suspected has become known. The swept-wing North American fighter beat the world's speed record all-hollow at the National Air Races in Cleveland by averaging 669 mph in six passes across the field in front of the grandstand —but the official, split-second cameras didn't record three of the passes, so the mark was unofficial. But two weeks later Maj. R. L. Johnson took his speedster out to Muroc Air Force Base where there were neither grounds nor bad weather and settled down to business. His four passes over the course were 669, 671, 670 and 672 for an average speed of 670.981 mph, a new world's speed record, and some 20 mph faster than the Douglas D-558 *Skystreak* record set a year ago. But of major importance is the fact that the F-86 is a standard, production Air Force fighter which actually carried ammunition in its guns and a standard combat equipment load during the record flights! A total of 674 of the type are now on order. The F-86 is known to have reached sonic speed in a dive and there are dark hints that it can attain the magical speed in level flight. At any rate, Maj. Johnson said immediately after the flight: "At no time did I have to extend the plane and at no time did I approach the plane's maximum capabilities." If 670 mph isn't an approach to the best the F-86 can do, then assuredly the U.S. has the "hottest" fighter now in the air!

BUT DON'T THINK it's all jets now, for the Navy has just ordered another airship, this time a Goodyear "N" type, the largest non-rigid airship ever built. With a capacity of 825,000 cu. ft., the new lighter-than-air craft will be nearly 15% bigger than the best previous design, the Navy's "M" type during the war. But the new design features several innovations, including remote-driven propellers with the two Wright *Cyclone* engines mounted within the car. The crew of 14 officers and men will have double deck accommodations. The new blimp will be 324 ft. long and stand 92 ft. high. Navy will use it for anti-submarine warfare, a job the type performed during the war better than any other craft, air or sea-going.

AIR FORCE HAS ORDERED still more airplanes! Another $103,600,000 has been allocated, most of it for standard types but some of it for an interesting new model. With this money AF has ordered 100 additional Lockheed F-80C and 100 more Republic F-84C jet fighters plus 13 Boeing B-54A bombers. The B-54A is the new name for the Boeing B-50C; it differs from the B-50 in minor structural modifications and in its new Pratt & Whitney R-4360-VDT engines. VDT, variable discharge turbine, is the trick name for the "compound" engine, which is a combination of the old reliable reciprocating engine with the new super-power gas turbine engine. By combining the best features of both, the result is an engine with 15% more power and 20% less fuel consumption than the standard Wasp Major engine. This will give the B-54A greater weight-carrying power getting off the ground and will allow it to fly much farther, indicating that the new craft is likely to be a super-strategic bomber in the very near future.

BUT THE AIR FORCE isn't putting all its eggs into super bombers and jet fighters for it also awarded a contract to Convair for 154 more L-13 super-slow liaison aircraft, bringing the total to 300 of the type. The all metal two place spotter weighs only 2900 lb. yet can carry two litters, mount skis or floats, fold its wings for overland transportation, fly at 115 mph or 15 mph, climb to 15,000 ft. and fly for 175 miles and return.

AND THERE IS MORE to come in the form of additional Northrop C-125 *Raider* transports, the start of production on the swept-wing superspeed Boeing XB-47 six jet bomber, more trainers and helicopters and, perhaps, either Martin or Convair Liners. AF wants either the 2-0-2 or the Liner as fast crew-trainers in the form of flying classrooms. The 300 mph cruising speed of these two craft would give AF trainees performance in the highspeed category so necessary to useful instruction applicable to jet bombers and transports. However, funds for this last item may not be forthcoming and the two companies have been in a neck-and-neck race for the point-award.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, AND CIRCULATION REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (39 U. S. C. 233)

Of MODEL AIRPLANE NEWS published monthly at Mt. Morris, Ill., for October 1, 1948.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Jay P. Cleveland, 551 Fifth Avenue, New York; Editor, Howard G. McEntee, 551 Fifth Avenue, New York; Managing editor, Joseph M. Mann, 551 Fifth Avenue, New York.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as those of each individual member, must be given.) Air Age, Inc., 551 Fifth Avenue, New York; Jay P. Cleveland, 551 Fifth Avenue, New York; Joseph M. Mann, 551 Fifth Avenue, New York; Jay P. Cleveland and Hyman R. Friedman and Yvonne P. Johnson as Trustees, under the Last Will and Testament of Geo. C. Johnson for Grace E. Johnson and Yvonne P. Johnson, 551 Fifth Avenue, New York.

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5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

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Sworn to and subscribed before me this 22d day of September, 1948.

RUSSELL H. UNRUH, Notary Public.

[SEAL] My commission expires March 30, 1949.

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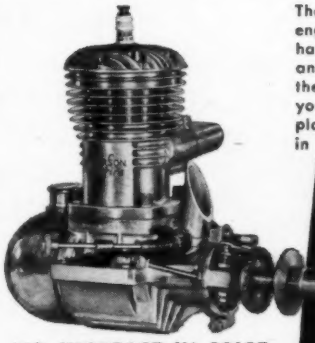

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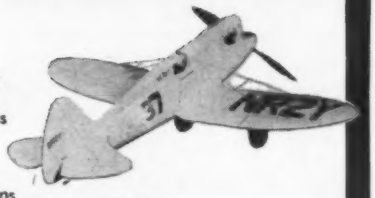

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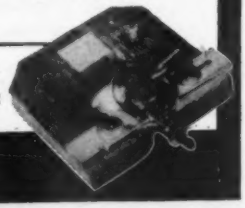

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January to December 1948

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Cleveland Air Races

(*Continued from page 17*)

ship is identical in construction and appearance to the fifth place "Little Toni" and the seventh place "Ballerina." They are full cantilever, low wing, all metal monoplanes. The "Minnow" sports a pair of wheel pants which the others do not have and is somewhat lighter in weight.

Steve Wittman's newest job is the typical Wittman design—fabric covered, wire braced, mid-winged, with square lines all around. In fact, the only noticeable departure from his last year's ship is the color of the paint job and the different rudder shape. Because of the simplicity of their construction, and the efficiency of their performance, Wittman's planes are the most widely copied designs in the field. But, as is so often the case, none of the imitators have the old master's touch. Steve himself took second in the race while his young protege, Bill Brennand, acquired fourth.

Art Chester's latest "Swee' Pea" is a duplication of his previous butterfly-tailed job. Featuring the same original spinner airscoop and fabric covered full cantilever mid-wing design, the new plane gained in performance through lighter weight and the addition of streamlined wheel housings. It appeared to be overly sensitive on the controls, however, and netted Chester only a third place.

Performance of the best of these midgets was so closely matched that the only appreciable difference was in their rate of takeoff. This factor proved to be the all-important one in determining the outcome of the races.

Although the Goodyear has been well publicized and has been given a good send-off by the aviation press in general, it appears at a disadvantage on the same program with high powered races and military jet demonstrations. Undoubtedly those who understand and appreciate the factors involved are wholeheartedly behind the little jobs, but their performance is not impressive to the average spectator who is being served near-sonic speeds on a wholesale basis.

For some mysterious reason, women have been restricted to the use of AT-6 type planes in the races. Of course this does make for an evenly matched competition and it does afford the spectators a good thrilling event in the intermediate speed class. The ladies naturally have done plenty to the ATs to get a little extra oomph for their 75 mile contest. It was Mrs. Grace Harris, flying sportswoman of Kansas City, who won the Kendall Trophy by a decided margin at 239.962. Her golden bronze AT-6 was modified to the extent that the rear cockpit is eliminated by a streamlined fairing of the front canopy, and a three bladed propeller with a reduction drive replaces the standard propelling unit. The Ranger powered ship flown in this event by Betty Clark was one of those unusual planes which always turn up at meets of this kind. It did not live up to expectations in performance but did show that ingenuity is used to improve these craft over stock models.

Tinnerman Products Inc. of Cleveland sought to stimulate the return of international participation in the races for the first time since the war by establishing a trophy for such a purpose. The Tinnerman Trophy Race was open to any type of plane having less than 2850 cu. in. engine displacement. Five starting positions were reserved for foreign contestants and five were to be filled from the American group by invitation. Unfortunately there were no foreign entries this year. However, the race served to furnish the fans with the closest finish of the three day meet. Bruce Raymond of Hammond, Ind., won the 105 mile event in a P-51 by a margin of 0.44 seconds over Bob Eucker of Cleveland.

Another interesting innovation in closed circuit flying was afforded by the Sohio Handicap Race. A technical committee established a starting sequence handicap for each entry, based on the speed of the plane in qualifying trials. Thus the fastest planes were the last to take off and the first across the finish line was the winner. A further stipulation disqualified any pilot exceeding his qualifying speed in the course of the race. Entries were limited to P-38, P-51 and P-63 aircraft only. Bob Eucker, taking off with a 137.5 second handicap, won this exciting hare and hounds chase at 320.220 mph in a P-63. The tabulated speeds in this event were calculated from the starting time of the first plane.

There was an international flavor injected into the show by the participation of Marcel Doret and Fred Nicole, French aerobatic aces. Canada, too, was represented by the sensational R.C.A.F. Vampire jet duo. Numerous stunt and precision acts—including Bevo Howard, Betty Skelton, Woody Edmondson, Jimmy Granere and Kim Scribner—rounded out the kind of a program that gives the aero-fan the year's biggest dollar's worth of excitement.

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